ARCHIVES OF OTOLOGY.

DEAF-MUTES IN DENMARK.

A DEMOGRAPHIC SKETCH BY

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(*With two wood-cuts.*)

ALTHOUGH deaf-mutism is comparatively infrequent in Denmark, the public care of the deaf-mutes, and all matters concerning these, is more advanced here than in most other countries. In the beginning of the present century, at a time when deaf-mutes in other countries were only exceptionally, and then by the efforts of single private individuals, raised out of their miserable social position, the Danish government resolved to make instruction of all deaf-mutes throughout the country compulsory (1817)—a measure which is still in most other countries a *pium desiderium*. In later years Denmark has kept its place at the head of all movements concerning the public instruction of deaf-mutes, having carried out great reforms in this matter. As the principal of this must be mentioned that the deaf and dumb children called to receive public instruction are divided into various groups, according to their degree of hearing, their intelligence, etc., so that every deaf-mute is certain to receive an instruction suitable to his abilities and requirements (see below).

The circumstance that the State has taken the instruction of deaf-mutes into its own hands has led to the registration of all deaf-mutes, the object of which has been not only to control the deaf-mutes of the country, but also to collect information on various points concerning the etiology of deaf-mutism. The registration is carried out according to the

following plan: At the beginning of each year each parish clergyman—who in Denmark is a state official—throughout the whole country has to send in to the government a report of all the deaf and dumb individuals who have lived in his parish during the previous year. The first report of a deaf and dumb child is made by filling in the different questions of a schedule (see Form I. in the Appendix). Each following year the deaf-mute is reported, by the clergyman of the parish where he resides, on another schedule (see Appendix, Form II.)[1] These schedules are sent in to the Danish Ministry for Educational and Ecclesiastical Matters, which in this way is able to control every deaf and dumb individual in the country.

The present paper is principally based upon the returns sent in to the Danish Ministry for Educational and Ecclesiastical Matters in the spring, 1886, supplemented by private information from the different deaf and dumb institutions of the country, as regards the inmates of these on the first of January, 1886, kindly placed at my disposal by Messrs. JORGENSEN (Fredericia), LASSEN (Copenhagen), and Dr. KELLER (Copenhagen). Whenever it has been desirable to supplement the answering of the different questions of these returns, I have—as far as possible—made more minute inquiries at the deaf and dumb institutions, etc. As the majority of the returns sent in to the ministry each year are of necessity issued on Form II. (see Appendix), the number of deaf-mutes "previously reported" naturally exceeding by far those "not previously reported," I have limited the object of the present investigation to embrace principally the questions of this form only, which questions more or less tend to illustrate what I may call the demographic features of the deaf-mutes of the country. I have, however, where I have thought it necessary, supplemented the questions of Form I. with some of those of Form II., having collected all the returns issued on Form II. since 1879, and

[1] In the metropolis of Denmark there is, however, only one schedule with a very limited number of questions which are answered by the deaf-mute himself or, his relatives. The schedules are distributed and collected by the police at the "police-census," which takes place twice a year.

up to July 1st, 1890, amounting altogether to 553. The reason why I have not used any forms dated before 1879 is simply that before this time the forms had a different shape, embracing a much smaller number of questions.[1] The other questions of Form II., which have a more direct bearing upon the causes of deaf-mutism, are under elaboration and will appear later on.

The calculations of this paper are based upon figures taken from the census of Denmark of 1880.[2] The relative figures may thus be somewhat too high for deaf-mutes on account of the increase of the population from 1880 to 1886, and this must especially apply to the metropolis, the population of which has increased considerably during this period of time. On the other hand, there can be no doubt whatever that there are considerably more deaf-mutes in the country than shown by calculations, whatever their nature is, as it is often late before deaf-mutism is recognized, and parents are remarkably tenacious of their hopes of an improvement in the course of time. These two facts give sufficient reason why many children are first registered when the legal age for school arrives, *viz.:* eight years of age.

The material thus used as a basis for this article has, as far as it has been in the author's power to control it, proved entirely reliable. It may be mentioned as an example that a statistical digest of questions 1 and 2 of the returns of deaf-mutes (previously reported) has yielded results which agree with the last census in all points where a comparison was possible. It must also be observed that the questions were, as a rule, answered exhaustively and intelligently, and in many cases it was evident that the greatest pains had been taken to make the answers as accurate as possible.

Finally, it must be observed that the results about to be given have been in many points compared with those gained in other countries.

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[1] The forms for the report of deaf-mutes as reproduced in translation in the Appendix are made by the late director of the Royal Deaf and Dumb Institution, Rev. MALLING-HANSEN and Dr. YOH. MYGGE.

[2] *Statistics of Denmark.* Series 4, Libera A, No. 5. Copenhagen, 1883.

I.—TOTAL NUMBER OF DEAF-MUTES.

In January, 1886[1] there were 1,225 deaf-mutes[2] in Denmark proper (Dependencies not included), which, estimating the population at 1,969,039, gives 63.7 deaf-mutes per 100,000 inhabitants.

A comparison with the relative number of deaf-mutes in other European countries—making use of G. MAYR'S statement—would place Denmark fifth on the list, if the country in which there is the smallest number of deaf-mutes is placed at the head.

Holland . . .	33.5	per	100,000	inhabitants
Belgium . . .	43.9	"	"	"
Great Britain . .	57.4	"	"	"
France . . .	62.6	"	"	"
Denmark . . .	63.7	"	"	"
Spain	69.6	"	"	"
Italy	73.4	"	"	"
Norway . . .	92.2	"	"	"
Germany . . .	96.6	"	"	"
Austria . . .	96.6	"	"	"
Sweden . . .	102.3	"	"	"
Hungary . . .	134.3	"	"	"
Switzerland[3] . .	245.2	"	"	"

It will be seen from the above survey that Denmark occupies a comparatively favorable position amongst the other European countries, as far as the number of deaf-mutes is concerned, and not least in comparison to the neighboring countries.

Investigations as to the temporary or permanent nature of Denmark's favorable position in this regard are of no little interest. Census of former years yielded the following information.

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[1] In 1886 not a single deaf-mute of the age of two, and only two of the age of three registered.

[2] George Mayr:—"*Die Verbreitung der Blindheit, der Taubstummheit, des Blödsinns und des Irrsinns in Bayern, nebst einer allgemeinen internationalen Statistik dieser vier Gebrechen.*"—München, 1877, pp. 313 and 351.

[3] According to BIRCHER'S investigations, the deaf-mute rate of Switzerland had increased to 300 in 1879 (see BIRCHER: *Der Endemische Kropf und seine Beziehung zur Taubstummheit und zum Cretismus.*—Basel, 1883, p. 97).

TABLE I.—THE DEAF-MUTE RATE IN DIFFERENT YEARS.

Year	1855	1860	1870	1880	1887
Number per 100,000 inhabitants	57.8	54.7	61.5	63.1	63.7

It would appear from the above survey that *deaf-mutism*[1] *has been on the increase in Denmark during the last twenty-five years.* It must, however, be remembered that the figures are too small to serve as a foundation for reliable conclusions, especially when it is taken into consideration that the three last figures do not differ greatly from each other, and that the census of 1880 is the basis of the calculation of the last figure. It is even more probable that the number of deaf-mutes is, when this is written, on the decrease, as (which will be proven later on) the considerable rise in the number of deaf-mutes born in 1871–1874 (see Diagram p. 384) has been succeeded by a considerable decrease in the years following.

It is not surprising that the numerical strength of the deaf-mute population of a country fluctuates in the course of years, for deafness being not only the result of congenital pathological changes in the organs of sound, consequently not solely depending on constant, though for the most part unknown, causes, such as hereditary tendency, consanguinity, influence of soil, etc.; but epidemic diseases are often, indeed, probably most often, the cause of the deafness which gives rise to deaf-mutism. Now, as both the spread and intensity of epidemic diseases, and also their character (which latter shows itself especially in an inclination to attack certain organs) varies greatly in the course of years, it may naturally be expected that the relative number of deaf-mutes will also fluctuate in the course of years. What happened in Pomerania proves that these fluctuations can

[1] It must, however, be observed that deaf and dumb idiots and deaf and dumb blind idiots, have formerly been included amongst deaf-mutes. In this work they are not included, not being considered as deaf-mutes in the proper sense of the word, as idiocy is probably the principal disease. If such individuals, of whom there were 17 in the country in 1880 were included here, the deaf-mute rate for 1886 would be 65.9.

be very considerable, the deaf-mute rate of that province rising from 1860–1875 from 86 to 114 per 100,000 inhabitants, the cause of this increase being epidemic diseases, especially a malignant and widespread epidemic of cerebro-spinal meningitis.[1] In other countries the variations in the deaf-mute rate have been more regular; for instance, in Saxony it was 74.5 in 1836; 61.4 in 1861; 62.2 in 1864; 60.0 in 1867; 61.0 in 1875; and 58.0 in 1880.[2]

II.—SEX OF DEAF-MUTES.

645 of the 1,255 deaf-mutes living in Denmark in 1886 were males, 610 females; whilst, as above mentioned, there were 63.7 deaf-mutes per 100,000 inhabitants; of either sex there were 66.6 male deaf-mutes per 100,000 male inhabitants, and only 60.9 female deaf-mutes per 100,000 female inhabitants (the male and female population being estimated at 967,330 and 1,001,679 respectively).

It will thus be seen that *deaf-mutism in Denmark is more frequent amongst the male than the female population*, a fact which has been proved whenever the deaf-mute rate has previously been taken in the country. Table II. shows that there have also been fluctuations within the two sexes as to the frequency of deaf-mutism in each.

TABLE II.—NUMBER OF DEAF-MUTES PER 100,000 INHABITANTS IN DIFFERENT YEARS.

Year.	Males.	Females.
1855	67.3	49.3
1860	60.4	49.2
1870	66.6	56.5
1880	68.6	57.6
1886	66.6	60.9

According to the above it would appear that *deaf-mutism is on the increase in the course of the years amongst the female population of* Denmark, while the figures remain fairly much the same for the males.[3]

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[1] WILHELMI und A. HARTMANN: "Taubstummen-Statistik des Provinz Pommern," etc. *Zeitschrift f. Ohrenheilk.*, vol. ix., p. 210.

[2] H. SCHMALTZ: *Die Taubstummen im Königreich Sacksen*, 1884, p. 11.

[3] Recently UCHERMANN found in Norway a considerable increase of the *male* population deaf-mutes ("Deaf-Mutism, Especially in Norway," *Norsk Magazine for Läger*, December, 1890). Here and in the following the titles of all Scandinavian papers mentioned are translated.

The male population of Denmark is, as in most other countries, numerically weaker than the female, the proportion being as 100 to 103.5. The proportion between male and female deaf-mutes in 1886 was as 100 to 94.9; consequently the *male deaf-mutes are both absolutely and relatively more numerous than the females*, and the difference is considerable.

In most other countries also there is a greater number of male than female deaf-mutes, the relative difference being in most places even greater than in Denmark. E. SCHMALZ has found, from the calculations of many statisticians, that the average proportion between male and female deaf-mutes is as 100 to 74, or about as 4 to 3.[1] As far as I know, the Kingdom of Würtemberg is the only exception, there being in that country, in 1881, 57 females and 43 males per 100 deaf-mutes[2]; the total number of deaf-mutes was, however, only 228, a figure small enough to admit of accidental causes playing an important part.

Up to the present a satisfactory explanation of the numerical superiority of male to female deaf-mutes has been sought in vain. The causes are in all probability numerous. To begin with, it is well known that a greater number of males are born than females, and the male sex maintains its superiority, at least in Denmark, during the first two decades. Naturally more male deaf-mutes are born than female, and a greater number of boys than girls are likely therefore also to fall victims to acquired deaf-mutism, which, as a rule, appears in the earliest childhood. A comparison of the numerical strength of deaf-mutes of both sexes with the whole population in the different periods of age will be of interest in deciding how far the above two facts alone explain the numerical superiority of male deaf and dumb individuals. This will be seen from Table III., the figures of which approach closely to those of the census of 1880.

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[1] *Ueber die Taubstummen und ihre Bildung*, 1848, p. 690.

[2] HEDINGER: *Die Taubstummen und die Taubstummenanstalten* etc., *des Königreichs Würtemberg und des Grossherzogthums Baden*, 1882, p. 117.

TABLE III.—RELATION BETWEEN MALES AND FEMALES IN THE DEAF-MUTE AND THE WHOLE POPULATION BY PERIODS OF AGE.

PERIODS OF AGE.	DEAF-MUTES.		WHOLE POPULATION.	
	Males.	Females.	Males.	Females.
Under 20 years.....	100	73.6	100	98.2
20–40 years.....	100	93.4	100	107.0
40–60 "	100	100.0	100	105.0
60 years and over....	100	115.0	100	118.0

It will be seen from Table III. that *the numerical superiority of male deaf-mutes is much greater during the first two decades* than that of the rest of the population in the same period of age, a fact which has been confirmed by the Prussian deaf-mute statistics of 1880.[1] So great is this superiority, that it is *only after the sixtieth year* that the greater male mortality, common to the population, is able to produce *a numerical superiority amongst female deaf-mutes* in Denmark. In Prussia the males kept the upper hand until the eightieth year.

Consequently, it is impossible to explain the numerical superiority of male deaf-mutes by the fact that a greater number of deaf-mute boys are born than girls, or that the epidemic diseases causing deaf-mutism are more frequent in the years of early childhood, when the males are numerically superior to the females, unless indeed on the supposition that the mortality amongst deaf-mute boys is proportionately very slight and that of deaf-mute girls very considerable, a supposition opposed to all experience, although it is with difficulty that it can be disproved, owing to the difficulties attached to a correct estimate of the number of deaf-mutes in the early periods of age.

Another cause of the greater frequency of deaf-mutism in the male sex is perhaps the circumstance that ear diseases—and deaf-mutism depends, as is well known, upon congenital or acquired pathological changes of the organs of hearing,

[1] GUTTSTADT: "Die Verbreitung der Blinden und Taubstummen," etc. *Zeitschr. des königt. Preuss. statistischen Bureau*, p. 201.

most frequently of the ear itself—are more common amongst males than females. CARUS[1] suggests this opinion when he speaks of a greater development of the fœtal organs of hearing in males, and a consequent greater tendency to pathological processes. Up to the present but little notice has been taken of this suggestion, which appears to me to be of value. Space, however, forbids a more exhaustive discussion of the subject.

Finally, it is possible that there is a connection between the above-mentioned fact and the circumstance that diseases originating in the brain (especially meningitis, or cerebro-spinal meningitis) are frequently the cause of the pathological conditions causing deaf-mutism, and much tends to prove that brain diseases, both acute and chronic, as also congenital, are more frequent in the male sex.[2] It is true that Danish works on deaf-mutism (MYGGE, BREMER, L. W. SALOMONSEN) do not, as a rule, consider brain diseases as an important agent in the etiology of deaf-mutism in Denmark, but this is certainly incorrect, and the fact is generally accepted to be valid for most other countries. It is well enough known that brain diseases are more frequent amongst males, when it is a question of chronic brain diseases of adults, but nothing certain is known as to the greater frequency of brain diseases in children amongst boys than amongst girls. There can, however, be no doubt that most investigators agree that epidemic cerebro-spinal meningitis (which most frequently attacks children, and plays so great a part in deaf-mutism) is more frequent amongst boys than girls.[3] Finally, it must be mentioned in favor of the above supposition, that idiocy, which is either caused by congenital brain disease, or brain disease acquired in infancy, is much more common in the male than the female sex. For instance, in 1880 there were 112 male idiots in Denmark to every 100

[1] *System der Physiologie*, vol. ii., p. 253.

[2] It is to Mr. GEORG YÖRGENSEN, superintendent of the Fredericia Deaf and Dumb Institution, that the supposition as to the importance of brain diseases in deaf-mutism is due, although, as far as I know, he has not announced it in print.

[3] Since the above was written, Dr. UCHERMANN, of Norway, has stated (in the paper referred to above) that in this country the male sex is predominating, especially amongst those deaf-mutes who have acquired their deafness after birth, and especially during meningitis, cerebro-spinal meningitis, otitis media, convulsions, trauma, and rickets.

female, a numerical superiority amongst the males which greatly exceeds that amongst the deaf-mutes.

III.—RELIGION OF DEAF-MUTES.

All statisticians who have entered into the question of the frequency of deaf-mutism agree that it is more frequent amongst professors of the Mosaic faith than any other. It has also been proved in many countries, where the population consists of both Roman Catholics and Protestants, that deaf-mutism is most common amongst the Catholics.

In Denmark it has been impossible to prove such a preponderance amongst Jews and Catholics (a preponderance which is of course in no direct connection with their religion, but is due to ethnographical and social conditions), not only because there is no question about the deaf-mute's creed in the forms mentioned on p. 374, but also because by far the greater majority of Danes are Lutherans, the figures for the confessors of the other religions being therefore exceedingly small. There were thus in 1880 only about four thousand Jews living in Denmark. Amongst these there were—according to special investigations performed by me—altogether four deaf and dumb individuals, which must be considered as a comparatively high rate.

IV.—AGE (AND MORTALITY) OF DEAF-MUTES.

The distribution of deaf-mutes in the different periods of age is shown by Table IV.

TABLE IV.—DISTRIBUTION OF DEAF-MUTES BY PERIODS OF AGE.

PERIODS OF AGE.	TOTAL NUMBER OF DEAF-MUTES.	NUMBER OF DEAF-MUTES PER 1,000 DEAF-MUTES.	NUMBER OF INDIVIDUALS IN GENERAL PER 1,000 OF LIVING POPULATION.
Under 15 years.	420	334·7	337·9
15–20 "	167	133.1	89.8
20–40 "	359	286.1	285.0
40–60 "	211	168 1	191.5
60 and over.	93	74.1	95.8
Age Unknown.	5	4.0	
Total.	1,255	1,000.0	1,000.0

According to the above there were in 1886 *comparatively as many individuals in the deaf-mute population under* 15 *and between* 20–40 *years of age as in the rest of the population, whilst there were comparatively a greater number in the period of age between* 15–20 *and fewer in the older periods.* It must, however, be called to mind that there are in reality a greater number of deaf-mutes under 15 years of age than stated above, as a number of deaf-mutes between 1–8 years of age are not registered from reasons already mentioned. There seems to be a difference in the numerical strength of the deaf-mutes and the rest of the population in the various periods of age, the cause of which it is of great interest to discover.

It must be especially pointed out that, *whilst the numerical strength of each period of age fluctuates but slightly in the whole population in course of years, this is not the case in the deaf-mute population,* as will be seen by Table V.

TABLE V.—DISTRIBUTION OF DEAF-MUTES BY PERIODS OF AGE.

PERIODS OF AGE.	TOTAL NUMBER.		NUMBER PER 1,000	
	1886	1880	1886	1880
Under 20	587.	533.	467.7	428.8
20–40	359.	413.	286.1	322.3
40–60	211.	207.	168.1	166.5
60 and over	93.	88.	74.1	70.7
Age unknown	5.	2.	4.0	1.6
Total	1,255.	1,243.	1,000.0	1,000.0

The cause of the considerable difference between the numerical strength of the deaf-mutes and the rest of the population in the different periods of age, must be sought in the fact that the number of individuals coming into and going out of the deaf-mute population in certain periods of time must be influenced by other causes than the rest of the population. Thus, the comparative numerical superiority of deaf-mutes between 15–20 which was proved in

1886, must be either explained by supposing that there was a considerable influx of individuals to the deaf-mute population in that period (which was about 15–20 years previous to the year in which the enumeration was made); or, that the mortality amongst the individuals belonging to that period of age was very low; or, finally, that *both* suppositions are correct.

The following diagram will give the best answer to the question as to an increased influx of individuals to the deaf-mute population in the period mentioned. This diagram only includes deaf-mutes *born* in Denmark, as those born outside the country only represent a purely accidental increase of the deaf-mute population. It will, however, be shown later on that the number of deaf-mutes living in 1886, and born outside of Denmark, is but very small.

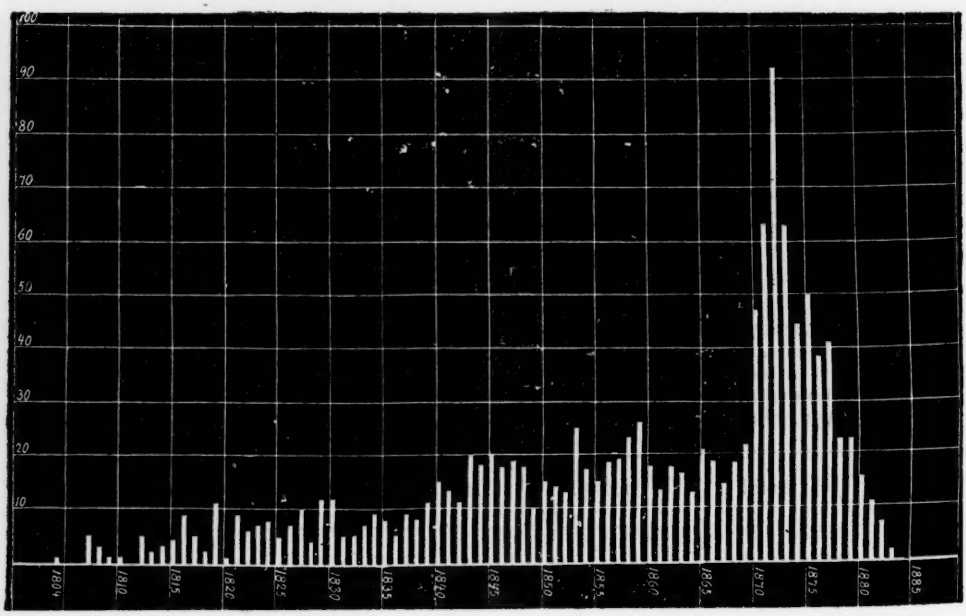


Diagram showing the number of deaf-mutes living in 1886 in (and born in) Denmark, arranged according to their birth-year. The height of the perpendiculur lines, expressed in Millimeters, represents the total number of deaf-mutes born in each year.

Before drawing conclusions from the diagram just given, it must be remembered that the last six or eight lines give no reliable idea of the strength of the periods of age in

question, for (as before mentioned) many deaf-mutes are not registered before the age of school is reached, which in Denmark is eight years. Further, it must be observed that a similar diagram, embracing the whole population, would give a series of vertical lines, the height of which would decrease pretty regularly, from right to left. The diagram given here, on the contrary, shows a number of vertical lines, which it is true decrease gradually from right to left, but do so extremely irregularly. For instance, the two lines which respectively represent the number of deaf-mutes born in 1830 and 1864 (and living in 1886) are about equal in height. *Especially remarkable is the sudden and considerable rise in* 1870–1874, *culminating in* 1872, so considerable indeed that accidental causes are put entirely out of the question.

The supposition that an unusually large number of deaf-mutes were born in the years 1870–75 cannot be received as an explanation of the considerable increase of deaf-mutes born in those years, as it is hardly possible to imagine that causes productive of congenital deaf-mutism would be considerably more active at some times than others. Therefore, the reason must be solely sought in the circumstance that the causes of acquired deaf-mutism have been accumulated in the years in question. As epidemic diseases are the principal cause of acquired deaf-mutism, it is reasonable to suppose that epidemics of diseases which experience has proved to cause deaf-mutism, have prevailed in Denmark in 1870–75 and the years immediately before and after. As according to experience gained in Denmark and elsewhere, scarlet fever, measles, and typhoid (enteric) fever play an important part in the etiology of acquired deaf-mutism, it will be of interest to ascertain whether one or more of these diseases have been prevalent in Denmark during the period in question.[1]

[1] It must be borne in mind that only a small minority of the deaf-mutes living in 1886 were reported on forms which contain information as to the cause of their deafness, and that therefore the question discussed here cannot be solved by an elaboration of these forms. This is, of course, a drawback of the Danish method of having two different forms for the registration of deaf-mutes, the numerous advantages of which is otherwise evident.

An answer to this question is to be found in the official Danish medical reports of these years. According to these, the following number of individuals were attacked by scarlet fever in 1870–1875,[1] the previous and subsequent five years being also given for comparison :

TABLE VI.—CASES OF SCARLET FEVER REPORTED, 1865–1880.

1865	1866	1867	1868	1869	1870	1871	1872
5,857	8,081	5,885	3,414	7,339	8,607	6,736	3,862
1873	1874	1875	1876	1877	1878	1879	1880
2,214	1,332	4,444	8,047	9,015	7,150	7,385	8,116

Table VI. shows, it is true, that scarlet fever was pretty prevalent during a certain period, and that it may have produced an increase in the deaf-mute population in 1870–1875. But, at the same time, the epidemic was not especially prevalent in the years 1872–1875, during which it might be expected to be unusually severe, if it is to be considered as the cause of the remarkably sudden increase of deaf-mutes born in 1872, scarlet fever being most injurious to the organs of sound during the first years of childhood. It will also be observed that the great frequency of scarlet fever in 1865–1867 had no influence upon the increase of the deaf-mute population, which just in these years is very slight.

According to the above it would appear that *scarlet fever although it may have influenced the rise in* 1870–1875, *has scarcely been an important cause of the sudden increase in* 1872.

The Medical Reports furnish the following information as to the prevalence of measles during the period in question :

TABLE VII.—CASES OF MEASLES REPORTED, 1865–1880.

1865	1866	1867	1868	1869	1870	1871	1872
2,988	6,322	3,830	2,989	11,557	6,042	2,044	3,529
1873	1874	1875	1876	1877	1878	1879	1880
11,617	10,928	8,417	1,502	1,002	4,648	21,729	16,468

[1] In Denmark compulsory notification of infectious diseases is incumbent upon every medical practitioner, and medical and surgical practice is only open to qualified medical men.

According to Table VII., measles were especially prevalent in Denmark in the years 1873 and 1874, at a time when they may have been a cause of the increase in the deaf-mute population. It must, however, be observed that the great increase in the deaf-mute population in the years in question falls principally to the share of certain districts in the Jutland in which measles appeared in 1873 and 1874 in a purely sporadic form. As the great prevalence of measles in 1879-1880 can hardly have influenced the increase of deaf-mutism in 1870–1875—acquired deaf-mutism being proved by experience to be most frequent between one and four years of age[1]—the conclusion arrived at is, that *measles cannot be considered as having had any great influence upon the great increase in the deaf-mute population in* 1870–1875.

As far as typhoid (enteric) fever is concerned it must be observed that up to 1876 gastric and typhoid fever were reckoned as one in the Danish medical returns. Consequently, when comparing the lists before and after that year, the figures giving the number of cases in each disease must be added together after 1876.

TABLE VIII.—CASES OF TYPHOID (AND GASTRIC) FEVER REPORTED 1866–1880.

1865	1866	1867	1868	1869	1870	1871	1872
13,540	11,523	8,158	17,300	11,009	11,058	11,114	12,353
1873	1874	1875	1876	1877	1878	1879	1880
11,075	12,146	14,495	15,826	12,775	14,664	13,341	12,660

It would thus appear that *typhoid fever was not especially prevalent in Denmark during the period in question.*

The question thus remains, what was the influence of epidemic cerebro-spinal meningitis upon the deaf and dumb population in the years 1870–1875? The importance of this disease in acquired deaf-mutism has not, up to the present, as above mentioned, been acknowledged in Denmark. BREMER writes thus in 1880: "This disease is of no importance as far as Denmark is concerned, having hardly ever

[1] A. HARTMANN, *loc. cit.*, p. 75, and H. SCHMALTZ, *loc. cit.*, p. 4, who state respectively the first to third years and first four years of childhood.

appeared in this country. Diseases of the membranes of the brain must be considered as amongst the most rare causes of deaf-mutism in Denmark." [1]

Epidemic cerebro-spinal meningitis is, however, known to have appeared as an epidemic in Denmark in 1844–1848, and 1872–1875. A glance at the diagram, page 384, will show that the increase of the deaf and dumb population was especially considerable during these two periods, and in the first period one year, and in the second two years previously. The increase during the period first mentioned is so considerable that a greater number of deaf-mutes living in 1886 were born between 1843–1848 than in the corresponding number of years 1864–1869; and not less than 369 individuals, *i. e.*, more than one fourth of the total number of deaf-mutes living in 1886, were born 1870–1875. This cannot but give rise to the supposition that *epidemic cerebro-spinal meningitis plays an important part in the present prevalence of deaf-mutism in Denmark*—a supposition which is strengthened by a consideration of the number of deaf-mutes born at certain periods in certain districts of Denmark when the disease has been especially prevalent. This will be more particularly treated in the following.

It must, however, be distinctly remembered that the results gained and the suppositions brought forward above are only correct on the presumption that the numerical superiority of certain periods of age, when present, is due to a greater increase of the deaf and dumb population in those years, and not to a less mortality. In other words, it has been assumed in the above that the mortality amongst the deaf-mute population has been evenly distributed over the whole period embraced in these investigations.

This leads us to the question of the mortality of the deaf-mutes—a question which cannot be solved as in the case of the general population (where the comparison between the numerical strength of the different periods of age gives the necessary information), the reasons having been mentioned above.

[1] *On the Pathological Changes Found in Deaf-Mutes.* Copenhagen, 1880, pp. 145 and 146.

It will easily be understood that it is impossible to obtain information as to the mortality of deaf and dumb children under 8 years of age. As far as the period of 8–16 years is concerned, a small, but valuable, paper by the late Rev. MALLING-HANSEN[1] throws a strong light on the mortality of deaf and dumb children in Denmark. According to MALLING-HANSEN'S investigations, 31 per cent. of the inmates of the Royal Deaf and Dumb Institution in Copenhagen died during their stay there during the years 1824–1839, *i. e.*, almost one third of all the inmates. During these sixteen years there were on an average 85 inmates each year; out of those, on an average, 5 died, the yearly death-rate being thus not less than 6 per cent. During the following thirty years (after the present building was taken into use in 1839), from 1840–1869, the mortality decreased considerably, only 14 per cent. of the total number of inmates dying during their stay in the institute. The average annual number of inmates being 107, and the average numerical number of deaths 27, the annual death-rate was 2.5 per cent. during this period. In the decade 1870–1879 the mortality of the inmates decreased so considerably that only 2 per cent. of the inmates died in the institute. The average annual number of inmates being 123 in this period, and the average annual number of deaths being 0.4 per cent., the yearly death-rate had consequently been reduced to 0.3 per cent., while the mortality rate of normal children in the same period of age as the deaf-mute inmates is nearly double as large, *viz.*, 0.6 per cent. This result certainly tends to prove that *the mortality rate is not less favorable amongst deaf and dumb children than amongst normal children, when the former live under good sanitary conditions.* There is therefore reason to presume that the unfavorable mortality reported from deaf and dumb institutions, especially formerly, is caused by the circumstance that the deaf and dumb children have lived under bad sanitary conditions, which, it is certain, was formerly the case in the Royal Deaf and Dumb Institution in Copenhagen.

[1] *On the Mortality Amongst the Females of the Royal Deaf and Dumb Institution in Copenhagen during the Period of 1824–1879.* Copenhagen, 1880.

As a base in computing the mortality amongst deaf and dumb individuals over twenty years of age, are used all the returns furnished on Form II. of deaf-mutes from the decade 1879–1888. The results are condensed in Table IX., where is also found for comparison the number of deaths to be expected in each period of age, and corresponding to the same number of individuals, according to the calculations made by TH. LÓRENSEN in the working population of Copenhagen,[1] and by RUBIN and WESTERGAARD, in the class of cottagers without land in the rural districts of Fünen.[2] These two classes are chosen because—as will be proved later on—the conditions of the deaf-mute population in general are very similar to those of the classes mentioned.

TABLE IX.—NUMBER OF DEATHS AMONGST DEAF-MUTES COMPARED WITH THE NUMBER OF DEATHS IN OTHER SOCIAL CLASSES.

Period of Age.	Males.				Females.			
	Number of living deaf-mutes.	Annual number of deaths amongst deaf-mutes.	Number of deaths to be expected amongst the working classes.	Number of deaths to be expected amongst cottagers without land.	Number of living deaf-mutes.	Annual number of deaths amongst deaf-mutes.	Number of deaths to be expected amongst the working class.	Number of deaths to be expected amongst cottagers without land.
20–25 years.....	435	—	3	3	458	10	3	3
25–35 "	902	14	9	4	831	27	6	6
35–45 "	798	19	15	4	674	15	9	6
45–55 "	398	23	14	3	410	14	8	4
55–65 "	362	15	23	8	299	7	11	5
65–75 "	187	13	20	10	179	2	14	9
75 years and over	29	6	6	13	57	6	11	22
Totals.....	3,111	90	90	45	2,899	81	62	55

[1] *Influence of Economical Conditions and Trade on Mortality.* Copenhagen, 1884, p. 13.

[2] *The Mortality of the Rural Population in the Diocese of Fünen.* Copenhagen, 1886, p. 82.

It will be seen from Table IX. that a comparison between the number of deaths amongst male deaf-mutes in each period of age and the number of deaths to be expected according to the computation of mortality amongst cottagers without land—a social class to which a large number of Danish deaf-mutes belong by birth, or to whose social position their own frequently corresponds, the majority of deaf-mutes in Denmark belonging to the poorer rural classes —shows that *a considerably greater number of deaths have occurred amongst the male deaf-mute population within the period mentioned than one might have expected*, and that this circumstance is principally owing to a *relatively high mortality in the periods of age* 25–65. It must, however, be remarked that the results obtained by RUBIN and WESTERGAARD are based upon investigations made in rural districts with an exceptionally favorable mortality. Further, it will be seen from Table IX. that the number of deaths amongst male deaf-mutes is exactly the same as might be expected from the death-rate of the male working classes of the metropolis, and the difference found in the different periods of age is not greater than might be explained by accidental causes on account of the small material used. If, then, one may presume that the returns used really embrace all the deaf-mutes of the country, and that the annual decrease in the number of deaf-mutes is caused by deaths (about which there can hardly be any doubt, as very few deaf-mutes emigrate from the country), it will be seen that *the mortality-rate amongst adult male deaf-mutes corresponds exactly to that of the social class which, according to experience made in this country, has the highest death-rate* (compare TH. LÓRENSEN, *loc. cit.*, p. 18 a. o.).

A comparison made between the computed and expected number of deaths amongst the adult female deaf-mute population on the one side and the adult females of the cottager class on the other side also shows a considerably higher death rate amongst the deaf and dumb adult females than might be expected. A comparison with the death-rate of adult females of the working classes in the metropolis shows, strangely enough, a much greater difference, principally

caused by a high mortality rate amongst female deaf-mutes from twenty to twenty-five years of age. This might, however, be explained by the fact that the female working classes of Copenhagen embrace a considerable number of female servants, whose death-rate, according to TH. LÓRENSEN, is especially favorable. This author found that the difference between the actual number of deaths and the number of deaths to be expected amounts to 66 per cent. This fact, however, does not sufficiently explain the great number of deaths amongst deaf and dumb females from twenty to thirty-five years of age, and there is, therefore, every reason to believe that *the mortality rate amongst young deaf and dumb women is really comparatively very high.*[1] The cause of this phenomenon can hardly be explained satisfactorily at present.

On the other hand, it seems as if *the mortality rate of deaf-mutes of the older periods of age, and especially of females, is less unfavorable during the period examined;* the figures are, however, too small to give reliable results. This does not in any way disagree with the results gained by Table IV., which showed a numerical weakness in the older periods of age of the deaf-mute population compared with the same periods of age in the general population; for it is very likely that it is caused by the circumstance mentioned before, *viz.*, that the deaf-mutes some fifty or seventy years ago lived under very bad sanitary conditions, when inmates of the Royal Deaf and Dumb Institution of Copenhagen, the only institution existing then. It is therefore probable that many of those inmates who escaped death from consumption during their stay there (consumption being the most frequent cause of death), left the institution with the germ of tuberculosis, thus extenuating the periods of age to which they belonged.

The high death-rate of the Danish deaf-mute population proved to exist at present and formerly is hardly caused directly by deaf-mutism itself, but can naturally be explained by the unfavorable social and sanitary conditions under which this population lives. The investigations mentioned

[1] This view is strongly corroborated by the results obtained by UCHERMANN in Norway, who recently had come to exactly the same result.

above tend to prove, anyhow, that deaf and dumb individuals, when living under good sanitary conditions, do not exhibit a higher mortality than normal individuals.

V.—DISTRIBUTION OF DEAF-MUTES IN TOWNS AND RURAL DISTRICTS.

In order to obtain information as to the distribution of deaf-mutes in different parts of the country, one ought to divide the deaf-mutes according to their *birthplace*, and not, as in most statistics, according to their place of residence. It is evident that the congregating of deaf-mutes in deaf and dumb institutions and asylums and—after their dismissal from these—in their neighborhood, necessarily causes such places to appear with a high deaf-mute rate, in case this is computed by comparing the number of deaf-mutes residing in such places with the number of inhabitants, while a division of deaf-mutes according to their birthplace has this advantage, that not only a survey is obtained of the places and districts where the comparatively greatest number of deaf-mutes are born, but also of the places and districts where the greatest number of cases of acquired deaf-mutism occur. It is a fact, namely, that individuals who acquire deaf-mutism after birth generally do this while living in their birthplace, because acquired deaf-mutism generally occurs during the first years of infancy, and because parents with young children do not, as a rule, leave their place of residence. In any case, experience made in this country has proved that deaf-mute children do not, as a rule, change their place of residence before being sent to an institution.

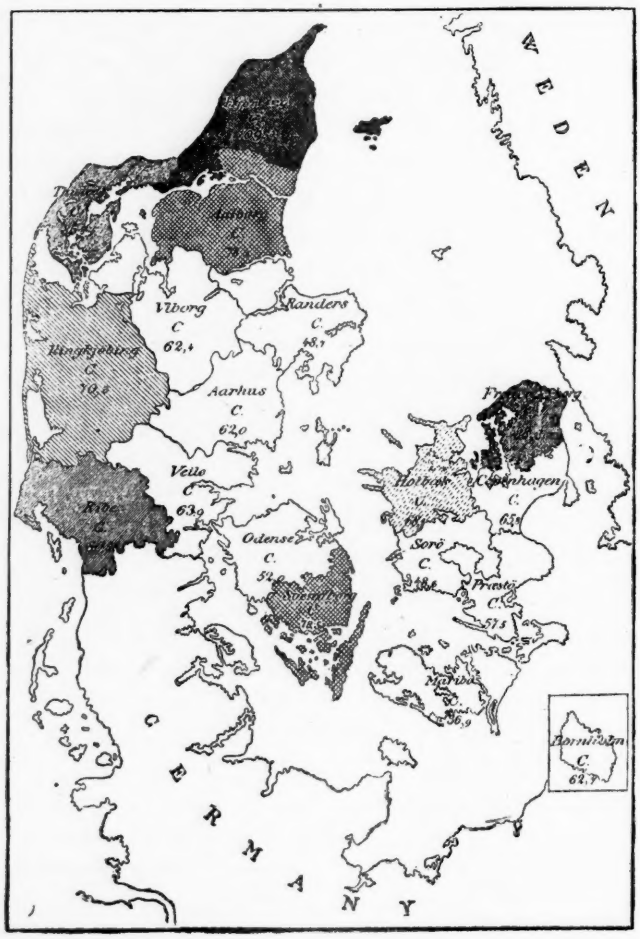
The deaf-mutes living in the country in 1886 were distributed according to their birthplace in the following way:

Born in the metropolis	122
" " provincial towns	150
" " rural districts	957
" " dependencies	9
" outside the country	17
Total	1,255

According to these figures there were in the metropolis 45.0, in the provincial towns 53.4, and the rural districts 67.5

deaf-mutes per 100,000 inhabitants living in the respective places.

It seems, therefore, that deaf-mutism is least prevalent in the metropolis, and most prevalent by far in the rural districts. The latter, *viz.*, that deaf-mutism is more prevalent in the



rural districts than in towns, is stated as a fact by nearly all statisticians since mentioned by WILDE as valid for Ireland.[1] I shall, however, be able to prove that this, at least as far as Denmark is concerned, is only apparent. For if the population of Denmark is divided into three groups,

[1] *Practical Observations on Aural Surgery*, p. 474.

viz., those born in the metropolis, those born in the provincial towns, and those born in the rural districts, *i. e.*, the same three groups as the deaf and dumb population was divided into, the result is (census 1880) that out of 100 inhabitants born in Denmark

8.69 12.46 78.85

were born respectively in the metropolis, the provincial towns, and the rural districts, while the corresponding figures for 100 native (Danish born) deaf-mutes were

9.93 12.20 77.87.

Considering how small the deaf and dumb population is compared with the whole population, it is evident that accidental causes easily exercise some influence, and the difference in the two rows of figures is, therefore, certainly not greater than can be explained by accidental causes. The figures thus prove that *the greater distribution of deaf-mutism amongst the rural population than amongst the town population, and the greater prevalence of deaf-mutism in provincial towns than in the metropolis is only apparent.* The cause of this apparent greater prevalence of deaf-mutism in the rural districts than in the towns, which formerly has been somewhat difficult to explain satisfactorily, is—at least in Denmark—to be sought in the circumstance that the towns, and especially the large towns, now-a-days exert a great attraction on the rural population, which to a great extent immigrates from the rural districts into the towns. Now as the deaf-mute rate of the rural districts is computed, either by comparing the number of deaf-mutes *born* there with the number of inhabitants residing there, *i. e.*, the inhabitants left after the emigration, or by a comparison of these latter with the number of deaf-mutes *residing* there, who, however, according to experience, do not show a great tendency to leave their birthplace, it is evident that the rate of the rural districts necessarily must be too high. On the other hand, the circumstance that the population of the towns, and especially of the metropolis, to a great extent is augmented by immigration, must cause its rate to be too low.

The share which the Danish *provincial towns* furnish to the deaf and dumb population is comparatively evenly dis-

tributed over the different decades of the century. The share of each town does not stand in proportion to the size of the town, the largest ones sometimes being the birthplace of very few deaf-mutes, and *vice versa.* It must, however, be borne in mind that the Danish provincial towns are all very small (only seven towns having from 10,000 to 33,000 inhabitants), and that consequently the figures of the present material are very small.

The share the Danish metropolis, Copenhagen, has furnished to the deaf and dumb population is, on the contrary, very unevenly distributed over the different decades of the century, there being for instance amongst the deaf-mutes living in Denmark in 1886 a less number born in the metropolis in 1860–1869 than in 1840–1849, and the last decade, 1870–1879, showing a very abrupt increase. I shall not go into details as to the investigations made to ascertain the causes of these circumstances, but state that the figures here also are so small in each decade (Copenhagen having at present, the suburbs included, 375,251 inhabitants) that accidental causes easily assert themselves, but it is very probable that epidemics of scarlet fever and cerebro-spinal meningitis have been important factors.

The share the various *rural districts* have furnished to the deaf and dumb population is very different, the deaf-mute rate varying from 36.9 (Alaribo County)[1] to 109.0 (Hjörring County) per 100,000 inhabitants, as seen by the accompanying map. The causes of these great differences shown by this map to be present in Denmark have been investigated by me, and the results laid down in another paper, to which I must refer the reader for details (" Distribution of Deaf-mutism in Denmark," *Hospitals Tidende*, 1890, No. 12 and 13.) I shall here only briefly mention that *there is no evidence of deaf-mutism being endermic in any place in Denmark, but that the difference between the various rural districts must be principally attributed to epidemic causes, and especially that the high rate of the northern and western districts of Jutland*

[1] Denmark is divided into eighteen counties (" *Amter* "), each one having on an average about 80,000 inhabitants in the rural districts, while the number of urban inhabitants naturally varies.

must be attributed to recent epidemics of cerebro-spinal meningitis. Further, there seems to be a strong connection between the deaf-mute rate and the fertility of the districts in as much as *the rural districts most heavily burdened with deaf-mutism are on the whole the least fertile and thinnest populated districts in Denmark*, while, on the other hand, most of the districts with a low deaf-mute rate belong to the most fertile and most densely populated districts. The fact that the most thinly populated districts on the whole are most heavily burdened with deaf-mutism is not incongruous with the fact that the high deaf-mute rates are principally caused by epidemic influences, but can easily be explained by the fact that epidemic diseases make the greatest havoc in districts where the population lives under bad social and sanitary conditions, with long distances to medical aid, etc.

It has finally to be mentioned that the place the deaf-mute rate of the various rural districts occupies in the series undoubtedly varies in the course of years. This I had occasion to illustrate at the last International Medical Congress in Berlin, exhibiting a map illustrating the distribution of deaf-mutes in Denmark in 1850. A comparison of this map with the one accompanying the present paper showed that *several rural districts which now exhibit a high deaf-mute rate, formerly did not do so, and vice versa.* This fact is, of course, closely connected with the facts mentioned above, *viz.*, that the deaf-mute rate is to a great extent influenced by epidemic diseases.

VI.—SOCIAL POSITION OF THE DEAF-MUTE.

The social position of an individual does not, as a rule, depend only upon matters concerning the individual himself, but also upon the conditions under which his ancestors, and especially his parents, have lived. This latter circumstance is of special importance when the individual in question is deaf and dumb, because deaf-mutes are so heavily weighted in the race of life that they stand but little chance to rise above the social strata in which they are born. On the other hand, the deaf-mute is not likely to sink consider-

ably lower in the social scale, as in most civilized countries he is cared for both by public and private charities.

The questions Nos. 1 and 2 of Form I. (see Appendix) are able to throw a light on the conditions under which the deaf-mutes in Denmark are born. There were altogether 553 returns containing answers to those questions dealing with the social positions of deaf-mutes' parents and their social condition. As, however, several of these returns applied to brothers and sisters, the number of fathers to deaf-mute offspring was less, *viz.*, 496 men. Amongst these, 154 were "cottagers,"[1] with some land or without any at all, 80 were "farmers" or "lot-owners,"[1] 71 were laborers, 34 were "tenant-cottagers,"[1] 11 servants on farms, 9 millers, 9 carpenters, 9 joiners, 8 fishermen, 8 shoemakers, 7 smiths, 6 tailors, etc., etc.

As nearly three fourths of the Danish population are rural, it is not to be wondered at that *the majority of Danish deaf-mutes belong by birth to the agricultural population.* It will, however, be remembered that the rural population of Denmark does not furnish a relatively greater share to the Danish deaf and dumb population than the urban.

The circumstance that a great majority of the Danish deaf and dumb mutes belong by birth to the rural population, must, as a matter of course, produce the result, that a comparatively great portion of the Danish deaf and dumb population takes a social position marked by the circumstances characteristic to the rural population,—provided that the deaf-mutes born in the rural districts do not for some reason or another in a marked degree emigrate from

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[1] The rural population of Denmark belongs principally to the agricultural class which consists of the following classes: (1) The "farmer" (*Gaardmanden*) either freeholder or tenant with, as a rule, from 2 or 3 to 6–8–10 *Tönder Hartkorn*, a *Tönde Hartkorn* being the Danish standard of land-tax indicating the quality of the soil, there being on an average 10 *Tönder Land* (1 *Tönde Land* = 5,516 square metres) to 1 *Tönde Hartkorn;* (2) the "lot-owner" (*Apbyggeren, Parcellisten, Boelsmanden*) with 1–3 *Tönder Hartkorn;* (3) the "freehold-cottager" with land (*den jordbesiddende Húsmand*) with ½–5 *Tönder Hartkorn;* (4) the "freehold-cottager" without land (*den jordlose Húsmand*), who only owns the site of his cottage, and, as a rule, a small garden; (5) the "tenant-cottager" (*Indsidderen, Lejehúsmanden, Arbjderen*) who neither owns cottage nor land. (See also *Denmark: its Medical Organization, Hygiene, and Demography*, Copenhagen, 1891, pp. 137, etc.)

the rural districts, for instance, because they more easily find occupation or support in towns, etc. Experience proves, however, that only 36 out of the 957 deaf and dumb individuals born in the rural districts, *i. e., only* 3.76 *per cent., had emigrated to the metropolis and had there their place of abode, and only* 58, *i. e.,* 6.06 *per cent., had emigrated to the provincial towns* (the inmates of the deaf and dumb institutions not included). *This shows a movement of the deaf and dumb population from the rural to the urban districts, which is almost exactly like that of the whole population,* the corresponding figures of which were in 1880, 3.54 and 6.93 per cent. Accordingly, it will be seen that the attraction of the metropolis to the deaf and dumb population is not so considerable as might be expected—and as has been feared—on account of the great majority of deaf-mutes having been, up to quite recently, instructed here, and on considering that special measures are taken here to support and assist deaf-mutes (societies, homes, etc.). Dr. UCHERMANN has pointed out the same fact in Norway, where, in 1885, 86.3 per cent. of the deaf-mute population were born in the rural districts, while as many as 76.8 per cent. resided there. There was in Norway likewise no particular rush of deaf-mutes to the metropolis.[1]

Further it has to be added that the rural (and consequently also the agricultural) classes predominate somewhat in the returns used as material for the present investigation, because—as stated by a special calculation—some 30 to 40 returns concerning deaf-mutes "not previously reported" from Copenhagen are missing, the returns from the metropolis, the provincial towns, and the rural districts representing respectively 4.25, 13.12, and 82.63 per cent. of the total returns, while, as mentioned before, the mutual numerical strength of these three groups of deaf-mutes from these three parts of the country is as 9.93, 12.20, and 77.87 per cent. This is caused by the circumstance that the deaf-mutes of the metropolis are reported on special forms and,

[1] *Information for the Ecclesiastical Committee as to some Circumstances relating to the Appearance of Deaf-mutism in Norway,* pp. 9 and 11.

as a rule, not reported on Form I. (see Appendix) until they are admitted to the deaf and dumb institutions, while the deaf and dumb children residing in the rural districts are frequently reported before.

The conditions under which the parents of deaf and dumb children live might be stated by means of question No. 2 of the Form I. The answers to this question vary, however, considerably, and it is, therefore, difficult to give a survey of these matters. I have endeavored to divide the social conditions into four classes, with the following result shown in Table X.:

TABLE X.—SOCIAL CONDITIONS OF DEAF-MUTES' PARENTS.

Wealthy	5	individuals, *i. e.*	1.0	per cent.
Good conditions	92	"	16.6	"
Very moderate conditions	311	"	56.2	"
Poverty	130	"	23.5	"
Indistinct or no answers	15	"	2.7	"
Total	553	"	100.0	"

We are, however, totally in lack of any material from other groups of abnormal individuals with which to draw comparisons, and there will, therefore, be no necessity for further remarks.

Finally, when mention is made that 27 of the 553 deaf and dumb individuals, *i. e.*, 4.9 per cent. were born illegitimate, all the information as to the conditions of the Danish deaf-mutes is given as far as their birth is concerned. The results gained in the above seem all to point out that *the deaf-mutes of Denmark to a great extent belong by birth to those classes of society which are least favorably situated economically as well as socially*—a result also gained in Saxony through the investigation of H. Schmaltz.

After having in the previous pages thrown light on the conditions of the Danish deaf-mutes as far as these are connected with the position and conditions of their ancestors, and with their place of birth, I will, in the following, deal with the circumstances applying to the person of the deaf-

mute, inasmuch as these are caused directly or indirectly by the deficiency of the deaf-mute.

As far as the education and instruction of the Danish deaf-mutes is concerned, there were altogether 575 returns concerning adult deaf-mutes "who had been previously reported" for the year 1886. By adult deaf-mutes is here understood deaf-mutes discharged from the deaf and dumb institutions, or confirmed, or if not belonging to any of these categories, over sixteen years of age. As the returns for the metropolis differ from those from the provincial towns and the rural districts these are not included here. Of these 575 returns (concerning 297 men and 278 women) 59 contained insufficient or unclear answers of the questions concerning education and instruction. Of the 516 left, 47, *i. e., only* 9.1 *per cent. were educated and instructed in their names* (license to be instructed at home being given by the Ministry of Educational Matters, where a sufficient guarantee of proper instruction is given). Thirty-one deaf-mutes, *i. e.*, 6.0 *per cent. had not received any instruction at all,* in the majority of cases because—as far as could be seen—the deaf-mutes in question were mentally so deficient as to render their instruction impossible. In some cases, the reason, however, was undoubtedly, that the parents had a prejudice against the compulsory report and instruction of deaf-mutes. Four hundred and thirty-eight deaf-mutes, *i. e.*, 84.9 *per cent. were reported to have been instructed in one of the deaf and dumb institutions,* which are all public or under public control. This shows a rate of instructed deaf-mutes which is hardly higher in any other country. As an example may be mentioned, that WILHELMI in the Regierungsbezirk Magdeburg found amongst 519 deaf-mutes (of whom, however, 44 were under the age of instruction) only 292 who were or had been instructed in a deaf and dumb institution.[1]

When the deaf and dumb children are called to attend the instruction given by the State, they are divided first into two classes, *viz.*, (a) those with deficient intelligence approaching more or less to idiocy, and (b) whose intel-

[1] "Statistik der Taubstummen des Regierungsbezirkes Magdeburg nach der Volkszählung von 1871." *Beilage zur Deutschen Klinik*, 1873, p. 84.

ligence does not show any abnormity, the division being made by means of the returns, (Appendix, Form 1) mentioned above. The first class of deaf-mutes are sent at once to (1) a special *institution in Copenhagen*, where they are instructed during the following eight years in a way adapted to their low intelligence. All the other deaf and dumb children are sent to (2) a *preparatory school in Fredericia*, adapted to receive 70 children, who receive here a preparatory instruction during one year, divided into seven different classes. After having been here one year, the inmates are divided into two different groups: (a) Those who are totally deaf and dumb, and (b) those who are only partially deaf, or partially dumb (in the latter case because they either are only partially deaf, or because they have become deaf in a comparatively advanced age). The second group (*viz.*, those only partially deaf or dumb) are sent to (3) the new *institution in Nyborg*, which can give room to altogether 135 inmates; these deaf and dumb children are instructed, by means of lip-reading and oral speech, during the following seven years. The first group (*viz.*, those totally deaf and dumb) is subdivided into (α) those whose intelligence or faculty of language is so little developed, that they are not able to learn oral speech, and these are sent to (4) a special *institution in Copenhagen*, adapted to contain 90 inmates, who are instructed by means of dactylology; and (β) those who are able to learn oral speech. This latter group of totally deaf and dumb children are transferred to (5) a special *institution in Fredericia*, where they are instructed by means of oral speech and lip-reading, being, however, on account of their number, instructed in two different parallel-classes, named the A-classes and the B-classes, the latter containing those with the lower degree of intelligence. This institute in Fredericia is adapted to instruct 190 deaf and dumb children. In all the institutions the instruction lasts eight years (the one year in the preparatory school included), and the inmates are all confirmed here after the end of their instruction. In the two institutions where oral speech and lip-reading are taught, the elder inmates are lodged outside of the institution in private families to accustom them to have intercourse with hearing individuals. All the inmates leave the institution educated in some practical trade, the girls being especially instructed in needlework, while the boys are educated chiefly as tailors, bootmakers, or joiners. The annual payment for each child is at present 280 kroner (18.16 kroner=£1), the payment in case of poverty of the parents being met by the respective county or town, to which the child belongs. Besides these public institutions, there is one small private school in Copenhagen: *Miss Mathisen's private school* for the education of deaf and dumb children of the better classes. In 1889 there were altogether 405 children instructed in the different institutions for deaf and dumb; of these 26 were instructed by means of gesture language (all these having an intelligence approaching more or less to idiocy), 75 by means of dactylology, and 304 by means of oral speech and lip-reading. The yearly expense of the State towards the instruction of deaf-mutes amounts to about 153,000 kroner.

The confirmation of the deaf-mutes must be considered as being in close connection with their instruction, in as much

as the fact that an individual is confirmed, or not, is an expression of his mental development during puberty, and of the result of the instruction received. Amongst the 575 adult deaf-mutes mentioned above, there were thirteen about whom no information could be obtained. Of the 562 remaining deaf-mutes 515, *i. e.*, 91.6 per cent. were confirmed, and about 8.4 per cent. there was a decided answer in the negative. This latter circumstance has in some cases been undoubtedly caused by the parents of the deaf-mute having withdrawn the child from any instruction whatever, but in the majority of cases the reason has undoubtedly been that the deaf-mute concerned has been mentally deficient. As it will be remembered, deaf and dumb idiots are not included in the present investigation, and there is, therefore, every reason to consider the number of deaf-mutes which have not been confirmed as comparatively considerable. This would decidedly tend to prove that deaf-mutism not unfrequently is accomplished by mental deficiencies—a fact which several pedagogues have laid great stress upon as the result of their personal observations, and which, in all probability, is connected with the fact that deaf-mutism is frequently caused by cerebral diseases.[1]

Amongst the external conditions which also narrow the limit within which the social position of the deaf-mutes is confined, must be mentioned their education in public institutions. The circumstances must necessarily produce a certain uniformity in the development of the deaf-mutes, as these institutions, as a matter of course, must be organized to give education and instruction adapted to the average type of deaf-mutes. This will naturally be to the disadvantage of those deaf-mutes who are considerably over the average of mental ability. This fact has in Denmark led to the classification of deaf-mutes, so that each deaf-mute receives an instruction as nearly as possible adapted to his faculties; but still even the more gifted deaf-mute will have greater difficulties to gain a prominent position than a

[1] See also HARTMANN, *loc. cit.*, p. 14.

normal individual, unless instructed by special teachers—a thing which only the wealthiest people can afford to give their deaf and dumb children.

An elaboration of the answers of that question on the forms which concern the social position and trade of the deaf-mute will prove that the considerations mentioned above are right. There were altogether 313 returns concerning deaf and dumb adult individuals over twenty years of age where these questions were answered distinctly. There were altogether amongst these deaf-mutes not more than *two who had a liberal profession, viz.*, two deaf and dumb teachers residing in the metropolis (not including those who, on account of means, had no occupation). *All the other deaf-mutes had been trained to live by manual labor.* No less than 236 deaf and dumb men, *i. e.*, 75 per cent., were or had been artisans; amongst these, shoemakers (96), tailors (59), joiners (37), were especially prominent. The rest were distributed throughout the various trades. Statistics from other countries (for instance, from Nassau and Norway) show the same preponderance of the same trades, a fact which is easily explained, as these trades, from various reasons, are particularly adapted for deaf-mutes.

One hundred and twenty-two returns contained information as to the occupation of deaf and dumb women; 72 women earned their living by sewing, 21 by washing, 12 were domestic servants, etc., and only one had a liberal profession, being a teacher. Out of the 278 deaf and dumb women, no less than 156 were reported either as married or as having no occupation (being principally maintained by their relations), or as being under the Board of Guardians (see below).

We shall now endeavor to discover whether the ordinary deaf-mute is able to support himself in the struggle for existence. The returns prove the sad fact that nearly half of all deaf-mutes over twenty years of age are obliged to fall back upon the help of others, as will be seen from Table XI.

TABLE XI.—ADULT DEAF-MUTES INDEPENDENT OR MAINTAINED BY OTHERS.

	Men.		Women.		Total.	
	Total.	Per cent.	Total.	Per cent.	Total.	Per cent.
Supporting themselves.....	188	67.6	96	37.5	284	53.2
Residing with relations.....	28	10.1	69	26.9	97	18.2
Supported by "	12	4.3	23	9.0	35	6.5
" private charity.....	11	4.0	9	3.5	20	3.7
" public charity.....	25	9.0	44	17.2	69	13.0
Inmates of workhouse..... ...	9	3.2	11	4.3	20	3.7
Without information.....	5	1.8	4	1.6	9	1.7
Total.....	278	100.0	256	100.0	534	100.0

Table XI. shows further that *there is a considerable difference between the fate of deaf and dumb men and women*, nearly two thirds of the men being able to support themselves, while this is only the case with a little over one third of the women. The number of deaf-mutes who are inmates of workhouses throws an especially strong light upon the condition of deaf-mutes, no less than 3.3 per cent. of the men and 4.3 per cent. of the women being boarded in workhouses, while the corresponding figures for the whole population are only 1.31 and 1.91 per cent. of individuals of *all* ages.

The great extent to which the deaf-mutes have to give up supporting themselves after having made their entrance in practical life shows clearly to what degree the want of hearing and speech limits the faculties of an individual. To this must also be added the circumstance mentioned above, *viz.*, that the mental faculties of deaf-mutes are frequently diminished from reasons in close connection with the deaf-mutism. When this is the case in Denmark, where the public care of deaf-mutes is especially highly developed, what must it be in other countries, where matters concerning deaf-mutes are less advanced?

Amongst the measures taken to ameliorate the sad position of deaf-mutes must be mentioned those which apply to the teaching deaf-mutes oral speech and lip-reading. It seems, however, that the energetic measures taken in Denmark in this direction, during the latter decades, have not as yet been very successful. This is shown by Table XII., from which it will be seen that *only 7.1 per cent. of the deaf-mutes who had left the deaf and dumb institutions, or who had been confined, used oral speech exclusively as their means of communication.*

TABLE XII.—ADULT DEAF-MUTES ARRANGED ACCORDING TO THEIR MEANS OF COMMUNICATION.

	Men.	Women.	Total.	Per cent.
Exclusively oral speech	19	22	41	7.1
Oral speech combined with other means of communication	41	44	85	14.8
Exclusively gesture-language	48	56	104	18.1
" writing	20	11	31	5.4
" dactylology	26	20	46	8.0
Combination of all three of the last-mentioned means of communication	132	116	248	43.1
No means of communication stated	11	9	20	3.5
Total	297	278	575	100.0

It will be seen from Table XII. that the majority of the Danish deaf-mutes use a combination of oral speech, gesture-language and dactylology, and gesture-language alone. Time will prove whether the erection of a new institute, in 1880, in Fredericia, and the energetic endeavors of the superintending teacher, Mr. GEORG JORGENSEN, to teach the deaf-mutes oral speech and lip-reading, will lead to better results.

VII.—MARRIAGES OF DEAF-MUTES.

Thorough information as to this question is only to be had from the returns from the rural districts and the provincial towns, the metropolitan returns being, as it will be remembered, issued on special forms, from which it can only

be seen whether two deaf-mutes are living together as man and wife. Eighty-one out of 278 deaf and dumb males over 20 years of age, *i. e.*, 29.4 *per cent. of the adult male deaf-mutes residing in the rural districts and in the provincial towns, were or had been married.* As 71.6 per cent. of all males over twenty years of the entire rural population (to which, as mentioned before, the great majority of the Danish deaf-mutes belong by birth and abode) were or had been married—according to the census of 1880—it will be seen that *deaf and dumb men comparatively seldom marry. The deaf and dumb women marry less frequently. Still, only* 46 *of the* 256 *women over twenty years, i. e.,* 18.0 *per cent., being or having been married,* while the corresponding rate of the entire female population of the rural districts was 75.0 per cent. As the total number of returns for the year 1886 contained distinct answers as to the question whether the deaf-mutes were married or not, the result is that out of 534 adult deaf-mutes no less than 407, *i. e., nearly three fourths of the adult deaf-mutes, were unmarried, while the number of unmarried individuals amongst the rural population only amounts to about one fourth.* A comparison as to matters in other countries shows that marriages contracted by deaf-mutes are still rarer there. In the Regierungsbezirk Magdeburg, for instance, not less than 88.0 per cent of the adult deaf-mutes were unmarried[1]; in the Regierungsbezirk Cologne,[2] 90.0 per cent.; and in the Kingdom of Prussia (in 1880)[3] even 91.5 per cent. of the deaf and dumb men and 94.0 per cent. of the deaf and dumb women were unmarried; in the Kingdom of Bavaria[4] 93 per cent. of the total number of adult deaf-mutes were unmarried.

Of the 81 married deaf and dumb men 6 were widowers, and 2 divorced. Amongst the 46 married women 3 were widows, 2 were divorced, and 1 abandoned by her husband.

The reason why comparatively so few deaf-mutes contract

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[1] WILHELMI, *loc. cit.*, p. 74.

[2] LENT: *Statistik der Taubstummen des Regierungsbezirkes Köln.* Köln, 1870, p. 20.

[3] GUTTSTADT: *loc. cit.*, p. 208.

[4] MAYR: *loc. cit.*, p. 29.

marriages must, in my opinion, be chiefly sought in this circumstance, that the men comparatively rarely attain an independent position to make a good livelihood. Besides, the position of a deaf-mute is frequently somewhat isolated—a circumstance which is a direct result of the deficiency with which the deaf-mute is afflicted. Consequently, his choice of a companion for life is, as a rule, more limited. To this must be added, as far as the deaf and dumb women are concerned, that their deficiency naturally renders them less attractive to men. It is to be expected that the position of deaf-mutes is more isolated in the rural districts and in the smaller towns, and that consequently marriages there are less frequent. This is corroborated by the fact that whilst 70 out of 534 adult deaf-mutes in the rural districts and in the provincial towns, *i. e.*, 13.1 per cent. had married each other (both husband and wife being deaf and dumb), 24 out of 100 deaf-mutes of the same age (over twenty years of age), *i. e.*, 24.0 per cent. had contracted such marriages (altogether 12 marriages).[1] The fear that marriages between deaf and dumb persons involves danger to the offspring is, even if this fear were well founded, undoubtedly of very small importance in preventing deaf-mutes from contracting marriages with each other. Experience from other spheres prove, anyhow, that the individuals in question do not, as a rule, take such regards when thinking of entering into marriage.

There were altogether in 1886, 100 marriages in the provincial towns and the rural districts where either husband, or wife, or both parties were deaf and dumb. Several of these marriages were, however, dissolved by death or separation. These 100 marriages were contracted as follows:

48 deaf and dumb men had married non-deaf-mute women.
35 " " " " deaf and dumb women.
37 " " women had married non-deaf-mute men.

100 marriages were contracted by 83 deaf and dumb men and 52 deaf and dumb women.

It will be seen from the above that *deaf-mutes in Denmark comparatively frequently intermarry, and especially that deaf*

[1] This information was obtained by counting how many female deaf-mutes were reported in the Copenhagen returns as being married to a deaf and dumb man under the heading of "position."

and dumb women very frequently, when contracting marriage, marry deaf and dumb men, more than two thirds of the Danish married deaf and dumb women having married deaf and dumb men. There is hardly any country in the world where deaf-mutes so frequently intermarry as in Denmark, where in 1886 the total number of such marriages (where both husband and wife were deaf and dumb) amounted to at least 47[1] per 1,255 deaf-mutes of both sexes and all ages. In Saxony there were (in 1880) 41 intermarriages between deaf-mutes, corresponding to 1,726 deaf-mutes of both sexes and all ages.[2] In the Regierungsbezirk Madgeburg[3] there were, in 1871, only 9 such marriages, corresponding to 519 deaf-mutes; and in Ireland, in 1851, even only 5 marriages where both husband and wife were deaf and dumb, corresponding to 4,151 of both sexes and all ages.[4] The reason why the two figures mentioned last are so small is, however, undoubtedly to some extent to be sought in the circumstance that the investigations from these latter two places are from an earlier period, and there can hardly be any doubt that the frequency of intermarriage between deaf-mutes is everywhere on the increase, as it is proved to be at present in Denmark (see further on).

As regards the *number of children born in the marriages contracted by deaf-mutes* (whether husband and wife or both were deaf-mutes), the present investigation has yielded the following results: In 3 cases there was no information as to the number of children. In the remaining 97 marriages there were born altogether 183 children, *i. e.*, on *an average* 1.88 *child per each marriage.* This seems to prove that such marriages where either husband, or wife, or both parties are deaf and dumb are comparatively but little fertile, as MYGGE[5] has found that the average number of children in general marriages amounted to 3.65 in the Danish rural districts examined by him—a figure which approaches

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[1] This figure is obtained by adding the 12 marriages in Copenhagen to the 35 marriages mentioned above.

[2] H. SCHMALTZ, *loc. cit.*, p. 139.

[3] WILHELMI, *loc. cit.*, p. 73.

[4] WILDE, *loc. cit.*, p. 472.

[5] MYGGE, *loc. cit.*, table iv., p. 156.

very closely that found by RUBIN and WESTERGAARD in Copenhagen.[1] Other authors have also found a comparatively small number of children born in the marriages contracted by deaf-mutes; thus, LENT found in the Regierungsbezirk Cologne[2] on an average only 1.75 children in each marriage of such kind, and WILHELMI[3] in the Regierungsbezirk Magdeburg, 2.00.

If the marriages contracted by deaf-mutes are divided into the three groups mentioned above, the result is as follows: Amongst the 48 marriages where only the husband was deaf and dumb, there was only 1 case where the number of children born was not stated; in the remaining there were born altogether 107 children, *i. e.*, on an average 2.3 in each marriage; 4 of these marriages were without any children. In the 17 marriages in which the wife only was deaf and dumb, there were altogether 38 children, *i. e.*, 2.2 in each; 3 of these marriages were without children. Of the 35 marriages where both husband and wife were deaf and dumb, there was 1 where the number of children was not stated; in the remaining 34 marriages there were altogether 38 children, *i.e.*, on an average only 1.1 child in each, and of these marriages no less than 13 were without any children. According to this, *the marriages where both husband and wife were deaf-mutes, seem to have been especially sterile*, partly because comparatively many of these were without any children, and partly because the rest of these marriages had only produced such a small number of children as will be seen from the following survey:

In 1	marriage	7	children	were	born;	total 7	children.
" 1	"	5	"	"	" 5	"	
" 1	"	3	"	"	" 3	"	
" 7	marriages	2	"	"	" 14	"	
" 9	"	1	child	was	" 9	"	
"15	"	0	"	"	" 0	"	
In 34 marriages were born altogether						38	children.

[1] *Statistics of Marriage, based upon the Social Strata, in Copenhagen.* Copenhagen, 1890, p. 79.

[2] *Loc. cit.*, p. 20.

[3] *Loc. cit.*, p. 74.

In Magdeburg WILHELMI[1] found in 9 marriages when both husband and wife were deaf and dumb, 4 where no children were born, and in the remaining there were only 11 children born. H. SCHMALTZ states[2] that the fertility of such marriages in Saxony is considerably greater, there being at the time of his investigation 41 such marriages, in which altogether 79 children were born, *i. e.*, 1.9 child in each.

It still remains to be mentioned that 9 deaf and dumb women had borne altogether 14 illegitimate children. WILHELMI found[3] 21 unmarried deaf-mute women with children, corresponding to 5.19 deaf-mutes of both sexes and all ages, H. SCHMALTZ 32 such women per 1,726 deaf mutes.[4]

The circumstance that a comparatively very small number of children are born in the marriages contracted by deaf-mutes, does not in itself prove that deaf-mutism directly predisposes to, or causes, a less fertility in the individuals afflicted with this deficiency. It might, namely, be presumed that there are other circumstances, in a more or less indirect way connected with the deaf-mutism of the individuals, which are the cause of the small number of children found in marriages contracted by deaf-mutes and—as stated above—especially in those marriages where both parties are deaf-mutes. As such circumstances are especially to be noted: (1) Advanced age at the contracting of marriage of husband, or wife, or both; (2) a comparatively early dissolution of the marriage by death or divorce; finally, (3) the circumstance that—from some reason or other—a great number of marriages were contracted shortly before the time of the present investigation.

In regard to the question whether deaf-mutes in Denmark marry at a more advanced age than people generally, Table XIII. gives the following results, which are compared with those gained from some rural Danish districts by RUBIN and WESTERGAARD.[5] This comparison is of value

[1] *Loc. cit.*, p. 74.
[2] *Loc. cit.*, p. 139.
[3] *Loc. cit.*, p. 74.
[4] *Loc. cit.*, p. 139.
[5] *Loc. cit.*, p. 57 and 58.

because—as mentioned several times before—the great majority of the deaf-mutes treated in this investigation belong to the rural population.

TABLE XIII.—AGE AT MARRIAGE OF DEAF-MUTES.

Periods of Age, in Years.	Men.			Women.		
	Deaf-Mutes.	Per cent.	Rural Population.	Deaf-Mutes.	Per cent.	Rural Population.
Under 20. ..	..	....	17.2	..	....	3.4
20–24.....	10	12.9		12	26.7	29.7
25–29.... ..	23	29.9	35.5	9	20.0	34.5
30–34.....	28	36.4	21.7	10	22.2	17.1
35–44.....	14	18.2	17.6	13	28.9	11.5
45 and over..	2	2.6	8.0	1	2.2	3.8
Total.....	77	100.0	100.0	45	100.0	100.0

Table XIII. shows that while the period of age, 25–29 years, is that at which the majority of men in the general rural population marry, *the majority of male deaf-mutes marry when* 30–34 *years of age.* This fact is easily explained by the circumstance that the mental development of deaf-mutes is somewhat slower than that of other individuals who are not deaf and dumb (their instruction for instance not beginning until they are 8 years of age), which necessarily must cause that they do not gain an independent position until at a comparatively more advanced age. As far as the *deaf and dumb women* are concerned, the table shows that *there are almost as many who marry at the age of* 20–24 *years as women of the general rural population* who marry at the same period of age, but that there are, furthermore, *comparatively many more deaf and dumb women who have married when* 35–44 *years of age than there are women who are not deaf and dumb* and who have been married at this age. This latter circumstance can hardly be explained as solely due to the same causes as mentioned for the men, but perhaps due to accidental

causes, the figures used in this investigation being somewhat small.

The influence of an advanced age at marriage on the number of the children born in the marriages contracted by deaf-mutes will, however, be more clearly demonstrated by examining the age at marriage of all the individuals who have married deaf-mutes, whether only husband or wife, or both, were deaf and dumb. The returns contained information as to 90 men (deaf-mutes and non-deaf-mutes), and 87 women (non-deaf-mutes and deaf-mutes), as will be seen from Table XIV.

TABLE XIV.—AGE AT MARRIAGE OF ALL INDIVIDUALS WHO HAVE CONTRACTED MARRIAGE WITH DEAF-MUTES.

Periods of Age, in Years.	Men.			Women.		
	Deaf-Mutes.	Per cent.	Rural Population.	Deaf-Mutes.	Per cent.	Rural Population.
Under 20. . .	..	....	17.2	2	2.3	3.4
20–24	13	14.4		24	27.6	29.7
25–29	26	28.9	35.5	26	29.9	34.5
30–34	31	34.5	21.7	17	19.5	17 1
35–44	12	13.3	17.6	16	18.4	11.5
45 and over..	8	8.2	8.0	2	2.3	3.8
Total.	90	100.0	100.0	87	100.0	100.0

Table XIV. shows that *the men who marry deaf and dumb women*—whether they are themselves deaf and dumb or not—*have a higher age when contracting marriage than men generally*, and that the figures do not differ much from those found for deaf and dumb husbands. As far as the women are concerned, Table XIV. shows that the age at marriage of the women who have altogether married deaf and dumb men—whether themselves deaf and dumb or not—is considerably lower than that stated for deaf-mute married women in Table XIII., and that the age at marriage of the former women does not differ much from that of the

whole population. This latter result necessarily reduces very much the significance of a more advanced age at marriages as a partial cause of the small number of children born in the marriages of deaf-mutes. On the other hand there can hardly be any doubt that it must have exercised a considerable influence in those marriages where the wife was deaf and dumb, and where the number of children was exceedingly small, as comparatively many of these women had married at an advanced age (see Table XIII.).

The significance of the early dissolution of deaf-mute marriages on account of premature death or frequent divorce as to the number of children born in marriages contracted by deaf-mutes is difficult to ascertain. The circumstance that the death-rate is somewhat higher among deaf-mutes of the younger periods of age, and especially among the females compared with the death-rate of the whole population, speaks somewhat in favor of the supposition that the first-mentioned cause might have been present and exercised some influence, though undoubtedly not a very great one. It does not seem, however, that there are particularly many widows or widowers among the deaf-mute population, though it must be observed that the figures in question are too small to give reliable results. On the other hand, it is beyond a doubt that the *number of divorced men aud women is conspicuously high in the deaf-mute population.* Consequently this circumstance might exercise some—though probably a very slight—influence.

It is then only with reservation that any importance can be attributed to the circumstances mentioned in the previous pages as causes of the small number of children born in the marriages of deaf-mutes. It will be remembered that a third circumstance was mentioned as a possible cause—*viz.*, that for some reason or other the marriages in question had only lasted a short time when this investigation was undertaken. An examination as to this question shows that thirty-five of the one hundred marriages this investigation embraces—*i. e., over one third of the marriages of deaf-mutes had lasted less than five years.* Table XV. shows then

TABLE XV.—NUMBER OF CHILDREN IN MARRIAGES OF DEAF-MUTES BY DURATION OF MARRIAGE.

DURATION OF MARRIAGE.	Both husband and wife deaf-mutes.		The husband only deaf-mute.		The wife only deaf-mute.		Total number of marriages.		Average number of children in each of these marriages.	Average number of children in ordinary marriages.
	Number of marriages.	Number of children.	Number of marriages.	Number of children.	Number of marriages.	Number of children.	Number of marriages.	Number of children.		
Under 5 years.....	17	11	15	15	3	5	35	31	0.88	1.18
5–9 years.....	8	21	11	28	4	10	23	59	2.57	2.63
10–14 years.....	4	4	8	33	3	12	15	49	3.27	3.64
15–24 years.....	1	—	6	22	2	1	9	23	3.55	4.46
25 years and over...	2	1	4	9	1	3	7	13	1.86	4.94
Duration not stated.	2	1	3	—	4	7	9	8	0.88	0.00
Total.....	34	38	47	107	17	38	98	183	1.88	3.07

that the small average number of children born in each marriage is principally due to the circumstance that the marriages which have lasted less than five years have produced such a small number of children, the average number of children in each of these only being 0.88, while the corresponding figure for the general population is, according to RUBIN and WESTERGAARD'S investigations[1]—1.18. This result might, however, be easily explained by the fact that no less than 12 of these 35 marriages contracted by deaf-mutes had only lasted one year or less. Further, the table shows that the deaf-mutes' marriages, which had lasted 5–15 years, have been but slightly less fertile than those of the same duration amongst the general population, while the number of children born in those marriages contracted by deaf-mutes, which had lasted over 15 years, has been considerably less than that of marriages of the same duration amongst the general population. This latter result seems at the first glance to be difficult to explain. A closer examination

[1] *Loc. cit.*, p. 80.

shows, however, that the number of children born in these latter marriages is so much reduced because 5 of the 16 marriages this group embraces have been sterile, *i. e.*, 31 per cent., while RUBIN and WESTERGAARD found only 12 per cent. of general marriages of the same duration to be without any children. There is then every reason to presume that the result is produced by accidental causes connected with the smallness of the material, and as the wives in all these five sterile marriages were respectively 36, 38, 40, 41, and 51 years of age on entering into matrimony, there is sufficient reason to believe that the circumstance that all these marriages were sterile is principally owing to the fact that the wives were of advanced age at marriage.

According to what is stated in the foregoing, there is reason to conclude that *the small number of children born in the marriages contracted by deaf-mutes is, to some extent, owing to the fact that the average age at marriage of deaf-mutes and their husbands or wives, who were not deaf and dumb, is somewhat advanced, compared with that of the general population (applying especially to the deaf and dumb wives). The principal cause must, however, be sought in the circumstance that comparatively many of the marriages contracted by deaf-mutes were of recent date at the time of the present investigation.* This latter circumstance is undoubtedly owing to the increasing propensity amongst deaf-mutes nowadays to enter into matrimony. This is clearly shown by the fact that in 1850 there were only 32 married deaf-mutes in Denmark, corresponding to 737 deaf-mutes of both sexes and all ages,[1] while in 1886 there were at least 151 married deaf-mutes (see p. 408) corresponding to 1,255 deaf and dumb individuals. Table XVI. also shows that there were in 1886 comparatively many more recent and fewer marriages of older standing amongst the deaf and dumb population than amongst the population of Copenhagen, as stated by RUBIN and WESTERGAARD.[2]

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[1] *Reports of the Statistical Bureau*, 1st collection, Copenhagen, 1852, p. 207.

[2] *Loc. cit.*, pp. 21 and 23.

TABLE XVI.—DEAF-MUTES' MARRIAGES ARRANGED ACCORDING TO DURATION AND COMPARED WITH THOSE OF THE POPULATION OF COPENHAGEN.

DURATION OF MARRIAGE.	Deaf-mutes.		Population of Copenhagen.
	Number of marriages.	Per cent.	Per cent.
Under 5 years	35	39.3	28.8
5–9 years	23	25.9	21.5
10–14 years	15	16.8	15.2
15–24 years	9	10.1	20.3
25 years and over	7	7.9	14.2
Total	89	100.0	100.0

Considering the smallness of the present material, and that there, as yet, exists no information from any other country, it is with great reservation that any statement can be made as to whether the circumstances mentioned in the previous pages explain sufficiently the small fertility of marriages of deaf-mutes stated to be present everywhere where this has been the subject of investigation, or as to whether there are other influential circumstances, and especially such as are more directly connected with the abnormity which deaf-mutes exhibit. Theoretical reasoning, based upon our present knowledge of the nature of deaf-mutism, does not seem to be in favor of the view that deaf-mutism being *in general* in itself a pathological condition which produces less generative faculty in the individuals concerned. On the other hand, it must be admitted that deaf-mutism *sometimes* appears as a congenital abnormity in families which exhibit signs of degeneration, and in such cases there might also appear sterility, or reduced generative faculty, in the individuals in question, which circumstance might be said to be due to causes in close connection with the deaf-mutism.

It remains to be mentioned that of the 183 children born in marriages contracted by deaf-mutes in Denmark, 89 were

males and 94 females. Of these 183 children, 41 were dead at the time of our investigation, 17 stillborn included, which shows a mortality rate of 22 per cent. RUBIN and WESTERGAARD found a rate of 30 per cent. in the marriages examined by them. On account of the smallness of the present material there is hardly any reason to consider the difference between these two rates as being of any importance.

It deserves notice that **not a single child born in the marriages of deaf-mutes was itself deaf and dumb**—a fact which does not stand in opposition to statements made by other investigators.

APPENDIX. SCHEDULES OF INFORMATION CONCERNING DEAF-MUTISM IN DENMARK.

FORM I.

REPORT FOR THE YEAR 18 FROM DIOCESE, OF A DEAF-MUTE, WHO HAS NOT PREVIOUSLY BEEN REPORTED.

NOTICE 1.—Every child, who on account of congenital or acquired deafness or deficient hearing (whether it is perfectly dumb, or has any faculty of speech, or even perfect faculty of speech) *is not able to receive instruction in the same way as normal children*, is to be reported.

2. The deaf and dumb child must be reported as *soon as* the deafness or deficient hearing is evident.

3. It is to be observed that all deaf-mutes are reported, and that this is made known to all concerned by annual publications in schools, and from the pulpit, or by other means.

4. If in any parish there are no deaf and dumb individuals living, this is to be reported (on blank paper).

5. The questions 6—11 are to be answered as thoroughly as possible by the medical attendant of the family, or the medical practitioner living nearest. The form has to be sent back to the rector of the parish under the doctor's seal.

1. County, district, parish town?

2. Full name of the deaf-mute? Birth-place? Birth-day and -year?

3. The parents' names? Position? Circumstances? Age at the birth of the deaf-mute? Wedding day, and if either of them are dead. The day of death? Is there any consanguinity between the parents.[1]

4. The brothers and sisters of the deaf-mute; their number (those dead included)? Sex? Age at time of the filling up of the form? What numerical place does the deaf-mute take amongst his brothers and sisters?

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[1] It is of special interest to obtain information as to whether husband and wife are (were) uncle and niece, nephew and aunt, blood-related first or second cousins, and whether the consanguinity is (was) one-sided (existing only in the male or female line), or whether it is (was) double-sided (existing both in the male and female line).

5. Has the deaf-mute received instruction at home or at school, and with what result?

6. What is the mental state of the deaf-mute at the medical examination? What is the bodily state of the deaf-mute at the medical examination? Special information is required: as to (a) whether the deaf-mute is totally deaf, or only partially, and if the latter, in what degree, and (b), whether the deaf-mute has any faculty of speech, and if so, to what degree.

7. A. Is the deaf-mute supposed to be *deaf-born?* If so, information is wanted of what supports this view, especially: (a) If this view is supported by the medical examination of the deaf-mute (and if so in which way), and especially by the existence of congenital malformations of the hearing or other organs,—or by the doctor's knowledge of the state of the deaf-mute during the first period of his existence; and (b) if there has been anything during the pregnancy, or at the birth, which might be supposed to have caused the loss of hearing, and if so of what nature? B. Is the deaf-mute supposed to have become *deaf after birth?* If so, information is wanted as to: (a) At what age the abnormity was first discovered; (b) what at that time supported the conjecture of its existence; (c) whether its appearance can be connected with a special cause, such as scarlet fever, measles, diphtheria, typhoid (enteric) fever, mumps; or other acute diseases; or to meningitis, or other diseases of the brain, or to traumatic lesions, *etc.*; or to a primary ear-disease; or to any constitutional disease, such as rickets, scrofula, hereditary syphilis, *etc.*; (d) whether this cause is known or supposed to have produced a diseased condition (and if so which) in the ear itself, or whether it is supposed to have influenced the central nervous system.

8. The parents of the deaf-mute? Are (were) any of these deaf and dumb, deaf, or suffering from ear-disease, and if so from which kind?

9. The brothers and sisters of the deaf-mute: Are (were) any of these deaf and dumb, deaf, or suffering from ear-disease, and if so from which kind, and what numerical place has he (she, or they) amongst the brothers and sisters?

10. The relations in older generations of the deaf-mute's family: Are (were) any of these deaf and dumb, deaf, or suffering from ear-disease, and if so from which kind?

11. (a) Has there been amongst the brothers and sisters, or the parents, or the relations in the older generations of the deaf-mute's family any one suffering from other abnormities such as: Lunacy; idiocy, or noticeably deficient development of the mental power; convulsions; epilepsy; palsies (paraplegia, hemiplegia, circumscript palsies); hysteria; stuttering and stammering; eye-diseases, especially deficiency of vision, nocturnal blindness (retinitis pigmentosa, hemeralopia); or other nervous diseases? (b) Has either of the parents of the deaf-mute been intemperate, and if so has it influenced him (her) mentally or physically, and how?

Questions 1 to 5.	*Questions 6 to 11.*
Date.....	Date.....
Signature of Clergyman.....	Signature of Medical Man.....

FORM II.

REPORT FOR THE YEAR 18 FROM DIOCESE, OF A DEAF-MUTE, WHO HAS BEEN PREVIOUSLY REPORTED.

1. County, district, parish town ?

2. Full name ? Age ? Birth-place ?

3. What are the deaf-mute's *principal means of communication :* Oral speech, writing, dactylology, or gesture-language ?

4. Is the deaf-mute instructed at home (if so by whom), or in one of the existing institutions for deaf-mutes, and if so in which ? When did the deaf-mute leave the institute ? Is the deaf-mute confirmed ?

5. What is the deaf-mute's trade ? Can he (she) support himself (herself), or does he (she) receive public support ?

6. Is the deaf-mute married ? If so, when ? Is the deaf-mute a widower (widow), and if so since when ?

8. The name, birth-day, birth-year, and birth-place of the wife (husband) of the deaf-mute ?

8. The children born in the marriage (those dead included) : Number ? Sex ? Name, birth-day, birth-year (eventually death-year) ? Birth-place ?

9. Are (were) any of the *brothers and sisters* of the deaf-mute, deaf and dumb, deaf, or suffering from ear-disease, and if so from which kind ?

10. Is (was) *the wife* (*husband*) of the deaf-mute or any of his (her) relations deaf and dumb, deaf, or suffering from ear-disease, and if so from which kind ?

11. Are (were) any of *the children* of the deaf-mute deaf and dumb, deaf, or suffering from ear-disease, and if so from which kind ?

12. To be noted here when the deaf-mute dies or leaves the parish.

Date.....

Signature of Clergyman.....

CONTRIBUTION TO THE SURGICAL TREATMENT OF EAR DISEASES.

By Dr. E. SCHMIEGELOW, of Copenhagen.

(Abstract of a communication to the Medical Society of Copenhagen.)

Translated by Alexander Duane, M.D., New York.

THE author of this communication touched upon only one group of the suppurative affections of the middle ear, namely, those accompanied by defects in the membrana flaccida, or upper portion of the tympanic membrane. He called attention to the peculiar relations existing in the uppermost division of the tympanic cavity, or *attic* as it has been called, a chamber which surrounds the head of the malleus and the incus, and which is thus divided into an inner and an outer portion, the latter lying to the outside of the malleus and incus and between them and the outer wall of the attic. This wall is formed by a bony plate which is part of the roof of the external auditory canal. The outer portion of the attic is bounded below by Shrapnell's membrane, and consists in part of a system of small, communicating cavities due to the presence of inter-anastomosing processes thrown out by the mucous membrane and extending from the wall of the attic to the mucous lining of the head of the malleus. A collection of pus in this outer division of the attic must necessarily perforate Shrapnell's membrane, and it happens quite often that cases are met with of suppuration of the middle ear, which are confined to the uppermost portion of the tympanum without affecting any other part of the tympanic cavity.

Acute cases in which there are collections of pus in the middle ear that discharge through Shrapnell's membrane are very rare. Out of 384 cases of acute suppuration of the middle ear Schmiegelow has seen only six (or scarcely 1.6 per cent.) in which the perforation was situated in Shrapnell's membrane. If these cases are neglected, stagnation of the secretion is very apt to occur and thus there is produced the chronic form which leads to destruction of the bones of the ear by caries, to perforation of the tegmen tympani, and to consecutive endocranial complications.

Treatment therefore must aim at preventing this retention and furnishing the most favorable conditions for drainage. This is best accomplished by making sufficiently large incisions in the lower part of the drum-head, through which the pus can make its escape more readily than would be the case if the attempt was made to force it through the aperture which is situated in Shrapnell's membrane and hence lies high up. In addition the perforation in Shrapnell's membrane, if very small, should be enlarged.

Chronic suppuration of the middle ear associated with perforation of Shrapnell's membrane is met with much more frequently than the acute form. In 924 cases of chronic suppuration of the middle ear, Schmiegelow found perforation of Shrapnell's membrane 54 times, that is in 5.8 per cent. Perforation of the uppermost portion of the drum-membrane is often overlooked, particularly in the large public clinics. Among 654 patients treated in dispensaries such perforations were observed only 17 times (= 2.6 per cent.), while in 275 cases of chronic suppuration of the middle ear treated in private practice they were observed 37 times (= 13.5 per cent.); and this latter figure Schmiegelow regards as more correctly expressing their frequency.

Cases of chronic suppuration of the middle ear having their seat in the uppermost portions of the tympanic cavity are extremely slow and pursue a very insidious course without causing any marked symptoms, until all of a sudden violent, acute, endocranial or universal (pyæmic) complications set in. They are often associated with the formation of cholesteatomata which cause the destruction of the surrounding bony parts including both the ossicles and the walls of the attic.

The treatment must be very energetic. Ordinary antiseptic injections through the auditory canal are of no service whatever, since the perforations are small and situated high up, and the secretion is more or less cheesy. A better effect is secured by injections through the Eustachian tube, but in three fourths of the cases such injections are inapplicable because in this affection the uppermost part of the drum-cavity is ordinarily separated completely from its lower portion by pathological adhesions. *Injections through the perforation with the aid of Schwartze's or Hartmann's tympanic cannulæ may be employed in conjunction with the enlargement of the perforation by the galvano-cautery and with the application of caustics melted upon the points of slender sounds.*

With this more conservative treatment the result in Schmiegelow's fifty-four cases was as follows: In twelve cases the result was unknown, sixteen were cured, eleven were improved, and fifteen gave a negative result.

In twenty cases it was necessary to perform excision of the tympanic membrane and of the ossicles, particularly the malleus and incus.

In fourteen cases extensive caries was found in the malleus, in two cases this bone was perfectly healthy, in two cases precise data were not forthcoming, and once nothing but the handle of the malleus was removed.

The incus was carious in all cases (three times in conjunction with the malleus and once alone) in which it was removed.

In nine cases there was a cure, in eight improvement, in two cases the operation had no effect upon the local condition, and in one case the result was unknown, as the patient stopped coming shortly after the performance of the operation. As regards the function, the hearing was more or less improved in ten cases, and in six remained as it was before the operation. In three cases a slight diminution in the hearing was made out to exist.

Schmiegelow, after having discussed at length the way in which excision of the malleus and incus together with the drum-membrane is to be performed, remarked that although we are able by means of this operation to cure many such

cases of suppuration of the middle ear, or at least are able to produce a favorable effect upon the course of the disease, there are cases in which the suppuration is not improved by operative interference. The cause of this was that, besides the inflammatory condition of the ossicles, there was present either a carious affection of the walls of the attic or a carious process with the formation of cholesteatomata in the antrum and mastoid cells. In the latter event a good result could be secured by making a supplementary operation and chiselling into the mastoid antrum. In four out of the twenty cases Schmiegelow was for this reason obliged to chisel into the mastoid antrum after having removed the ossicles.

To operate for carious affections of the walls of the attic we may, as proposed by Wolf and Küster, chisel into the antrum and at the same time remove the posterior wall of the auditory canal in its entire length. By so doing we gain room so as to be able to work to better advantage with the sharp spoon in the deeper parts.

It is still better to operate in the way proposed by Stacke. He detaches the external ear and the periosteum as well, by a curved incision running behind and above the ear, thus exposing the external aperture of the bony meatus, divides the periosteal lining of the bony meatus as close to the drum-membrane as possible, and then draws the cutaneous canal out from the osseous meatus. He next removes the malleus and drum-membrane and chisels away the deepest portion of the roof of the auditory canal, by which means the outer wall of the attic is removed. The incus is now taken away, the diseased areas in the attic are treated with the sharp spoon, and, after everything unhealthy has been removed, the cutaneous canal is put back in place and the cutaneous wound is entirely closed by sutures. Schmiegelow has performed the operation eight times, but did not care to go fully into the details, as too short a time had elapsed since their performance for him to have any confirmed views as to the ultimate result. Lastly Schmiegelow, to show the peculiar anatomical conditions in the attic, gave a demonstration with the microscope of a set of consecutive microscopic sections.

ON THE PATHOGENESIS OF TRANSUDATION INTO THE MIDDLE EAR IN CASES OF STOPPAGE OF THE TUBE.

By Dr. ARNO SCHEIBE, Munich.

Translated by Dr. Ward A. Holden.

SO long ago as 1889 I examined serum from the middle ear in cases of stoppage of the tube, and in none of the four cases were micro-organisms found.[1] A year later Kanthack[2] examined seven such cases in Hartmann's clinic, from all of which he cultivated cocci, and from six, bacilli also. As Moos[3] has recently expressed the opinion that microbes are present in the disease, I have again studied a number of these cases.

The condition resulting from simple closure of the tube is readily differentiated from the inflammatory affections of the tympanic cavity.

The membrana tympani shows the characteristic signs of retraction which Bezold[4] describes as follows: "The long process of the malleus appears more oblique and foreshortened, and the lower half of the membrana tympani is relatively larger than usual. The short process of the malleus, pushed somewhat downward, is prominent, and Shrapnell's membrane about it is retracted and may exhibit various folds, one of which, quite pathognomonic, extends in most cases from the short process downward and backward, and in some

[1] These Archives, vol. xix., p. 163.

[2] *Ibid.*, xix., p. 25.

[3] *Deutsche med. Wochenschr.*, 1891, No. 11.

[4] *Berliner klin. Wochenschr.*, 1883, No. 36.

cases is so marked that it may conceal the manubrium of the malleus. The thin membrana tympani lies like a wet cloth on the structures of the tympanum. For this reason the short process often projects like a pyramid, and the line of the handle of the malleus appears as a broad white band, because the membrana tympani lies not only on its outer margin, but also on its posterior surface. Even deeper-lying structures may be seen through the membrana tympani in consequence of its retraction; thus we frequently see the lower end of the long process of the incus, and the tendon of the stapedius muscle running perpendicularly to it, as a white triangle near the superior posterior margin. The color also is usually altered, and is darker, partly as a result of the retraction, partly due to the optical effect of the hyperæmia ex vacuo, which is caused by the rarefaction of the air, and shows through the *Mt.*"

The most important information, however, is furnished by the changes in the reflexes. "The normal triangular reflex may become longer and narrower, may disappear entirely, or may be displaced from the umbo toward the periphery and assume a more circular or irregular form, and often an increased lustre (concavity reflex). Besides this we may have, between the latter and the periphery, the linear reflexes which Politzer has described. A number of other reflexes characteristic of retraction are frequently found in the neighborhood of the short process. Above the short process, in Shrapnell's membrane, one or more concavity reflexes may be seen. The punctate reflex of the short process becomes lengthened into a line which extends along the margin of the posterior fold, or the entire posterior superior triangular portion above the posterior fold furnishes a reflex, as it forms a surface perpendicular to the visual line of the observer. A series of reflexes may appear at any point where there is a local retraction of a particular portion of the membrana tympani, and also in atrophy of the entire membrane (collapse)." In complete atrophy we often find a semicircle of reflexes resembling a rosary near the periphery below.

If the air douche be employed in these cases, the membrane

is pushed outward and the hearing at once becomes normal or nearly so.

In many cases we find, besides what has been mentioned, a reddish-yellow or bottle-green color, sharply marked above, differing from the yellow color seen in purulent cases, and the patient has perhaps a feeling as of water in the ear.

In these cases the air douche improves the hearing, but a single employment of it never has so marked an effect as in simple closure of the tube. If paracentesis be done the reddish-yellow color changes at once as a result of the admission of air. No fluid escapes at first. If the air douche be now used, a quantity of amber-yellow, partly serous, partly viscid, transparent fluid escapes. When the paracentesis wound is healed, which may be a day or two after, the symptoms of simple stoppage of the tube may remain, or the hearing and the membrane may be normal.

Probably in every case of stoppage of the tube there is at least a small quantity of this fluid present.

When the fluid is removed for examination, some fresh blood from the paracentesis is mixed with it, but besides this the only solid elements in the fluid are red and white blood corpuscles, regularly distributed, and epithelium from the mucous membrane, the latter cells few and isolated. Old cases show fewer cells than fresh ones. The white corpuscles are often present in greater number than red ones. The red are not arranged in rolls and are paler than normal. The white corpuscles are often irregular in outline and contain fat granules. Fibrin is also found.

In these last bacteriological examinations I have changed the method.

No plate cultures were made, but with a large platinum loop full of the fluid linear inoculations were made in agar tubes, which were kept in an incubator at 35° C.

Before the paracentesis the external canal was syringed several times with 4 per cent. carbolic solution, and this was allowed to remain five minutes in the canal. The canal was then thoroughly dried through a sterilized speculum with sterilized cotton. Speculum and needle were cleaned in 5

per cent. carbolic solution and dried with sterilized cotton or over a flame.

In this manner seven cases of accumulation of serum in the middle ear with stoppage of the tube were examined. In no case did a single colony develop in the tubes. For the purpose of control, other microbes were inoculated into the same tubes later and all developed colonies.

In making preparations of large quantities of serum according to Gram's method, cocci could be discovered only in those cases in which the fluid also contained pavement epithelium from the canal. The number of cases, however, in which the serum was not contaminated with cells from the canal, and in which cocci were wanting, is too small to justify the assertion that there are not possibly some few cocci in the middle ear. Nevertheless the number of these cocci must be so small that they cannot be considered the cause of an inflammatory secretion, and therefore the designations "acute catarrh of the tympanic cavity" (Schwartze, Gruber, Urbantschitsch), "otitis media serosa" (Zaufal), and "secretory form of middle-ear catarrh" (Moos, Politzer), may cause confusion.

Bezold explains the process as follows: "As in all vascular pneumatic cavities, whose communication with the outside air is cut off, we soon find in the middle ear a diminution in the volume of air. Since the oxygen is taken up by the circulating blood, and carbonic acid is not given off in equal volume, the pressure of the air is diminished in the closed cavities, and this first makes its influence felt in the yielding walls of the tympanic cavity, the tympanic membrane, on the one side, and the membranes of the fenestræ in the labyrinth wall on the other." The vessels of the mucosa dilate in consequence of the diminished pressure, and the outer air forces the membrana tympani and the chain of ossicles inward. We get in this way the picture of the simple stoppage of the tube.

If now this stoppage continues for a time the result of the hyperæmia ex vacuo is the transudation of the serum and a small number of the corpuscles of the blood from the vessels in the cavities of the middle ear. The red and white

corpuscles then undergo the changes that were described above. The viscid, stringy condition of the serum is due, according to Kessel,[1] to the disintegration of the white corpuscles.

A case that I have described,[2] with cicatricial obliteration of the pharyngeal mouth of each tube, showed that with continued stoppage of the tube the evacuation of the serum is followed by its re-accumulation.

Bezold, in his statistical report, has called the disease in question "closure of the tube with serum (in the middle ear)," and given it a separate heading. This designation is long and might be replaced by "transudation into the middle ear." In this category are then included also those cases in which from any cause whatever there is a stoppage of the aditus ad antrum or the passage to one of the peripheric pneumatic cells, and in which the pneumatic cavities farther back become filled with serum, as is often found at autopsies. The cause, for example, catarrh of the tube, and the position of the closure, for example, cicatrices at the tympanic mouth of the tube, or closure of the passage to a cell from whatever cause, might then make up the subdivisions.

Besides these cases of transudation into the middle ear, I have also examined a number of those cases of fresh *inflammatory* affection of the middle ear which have no tendency to perforate, and in which the paracentesis wound heals readily (otitis cat. acuta and subacuta.)

In otitis media cat. acuta, which is readily distinguished from transudation into the middle ear by its inflammatory symptoms, Weichselbaum, Netter, and Gradenigo have found microbes. I found the streptococcus pyogenes in one patient, and the diplococcus pneum. once in a dead subject.

Subacute catarrh of the middle ear must be differentiated from the acute form on clinical grounds, since the subjective inflammatory signs are so often wanting, and the objective signs of inflammation in the middle ear are always present, but less marked or not noticeable, in the membrana tympani.

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[1] *Deutsche med. Wochenschr.*, 1891, No. 48.

[2] *Ibid.*, vol. xix., Case 14.

When subacute catarrh is complicated with stoppage of the tube, it may greatly resemble simple stoppage of the tube. Yet there are marked differences in the course of the disease and the nature of the secretion. In the latter, according to my observation, the pale red blood corpuscles are always wanting but there are numerous epithelial cells, pus cells, and microbes in great number.

A STUDY OF SOME TOPOGRAPHICAL RELATIONS OF THE TEMPORAL BONE.

(*Third Series.*[1])

By Dr. OTTO KÖRNER, Frankfort—o.M.

Translated by Dr. Ward A. Holden.

THE following investigations were undertaken principally for the purpose of verifying previous results by using a perfectly reliable method.

My material consisted of 54 horizontally-cut temporal bones from 27 skulls of various races, these skulls being included in the 87 on which I made my first report.

As before, I call skulls with an index greater than 1.3 dolichocephalic, those with an index below 1.3 brachycephalic.

The temporal bones were sawn out of the skulls which had been divided in a sagittal median plane, and were then divided by a horizontal section in the axis of the external canal. All measurements were made on the upper and lower portions so obtained.

For the measurements I used especially constructed steel compasses. The registering branches were straight and long enough to permit the reading of tenths of a millimetre on the scale at the end. The measuring branches terminated in a sharp point. All measurements were recorded in millimetres.

1.—The differences in breadth and depth in the two transverse sulci, and the variations in the two jugular fossæ.

[1] These Archives, vol. xvi., p. 281 ; vol. xviii., p. 210.

It has long been known that the right transverse sinus is mostly larger than the left, and that in consequence the sigmoid fossa of the right transverse sulcus mostly extends deeper anteriorly and farther outward in the base of the petrous portion of the temporal bone than the left (Bezold, Rüdinger, Hartmann, Heim, V. Meyer, Körner, and others).

Accurate measurements of these variations have hitherto been wanting.

I found the average thickness of the outer wall of the transverse sulcus at its thinnest point in the mastoid region, right, 6.00, left, 8.55 *mm*—the average difference between the two being 2.55. The greatest difference in a single skull was 6.6.

The shortest distance from the transverse sulcus to the external canal: average, right, 11.86; left, 12.91, difference 1.05. The greatest difference in a single skull, 7.2.

Theile, Rüdinger, and I have shown that the jugular fossa corresponding with the greater size of the right transverse sinus is much larger and deeper on the right side than on the left. I have shown further that in consequence of this relation defects in the floor of the tympanic cavity are more frequently found on the right side than on the left.[1]

Accurate measurements of the depth and width of the jugular fossa are not possible on account of its varying form. It is also impossible in all cases to measure the thickness of the bony wall between the tympanic cavity and the jugular fossa, since frequently irregularities in the floor of the cavity interfere.

In order to obtain sure and comparable measurements I took the shortest distance between the jugular fossa and the tympanic sulcus. This distance varies between 0.5 and 8 *mm*, and was, on the average, right, 3.51; left, 3.67. The greatest difference between the two sides in the same skull was 5.3.

11.—Influence of the form of the skull upon the position of the transverse sulcus.

Bezold was the first to notice that the deep extension of the sigmoid fossa of the transverse sulcus into the base of

[1] *Arch. f. Ohrenh.*, vol. xxx., p. 236.

the petrous portion of the temporal bone, as well as the deeper situation of the middle fossa of the skull, are found for the most part in brachycephalic skulls. I have repeatedly been able to confirm this statement, but have maintained, contrary to Schülzke,[1] that exact measurements can be got only on divided temporal bones.

Such measurements I now give.

	INDEX OVER 1.30	INDEX UNDER 1.30	
AVERAGE DIMENSION IN	32	22	TEMPORAL BONES
Thickness of outer wall of transverse sulcus at its thinnest point in the mastoid region.	8.54	6.53	Average difference between dolichocephalic and brachycephalic skulls. 2.01
Shortest distance between external canal and sigmoid fossa.	12.50	12.21	0.29

The difference in the various skulls is not sufficiently shown by these figures, since but few of the bones measured were from extreme forms of skulls, there being no brachycephalic skull over 1.16 index; among them, however, the average difference found here between brachycephalic and dolichocephalic skulls approximates the marked difference in depth between the right and left sulci.

III.—Influence of the form of the skull on the situation of the floor of the middle cerebral fossa.

I have previously shown that the floor of the middle fossa in dolichocephalic skulls lies higher above the external canal and the spina supra meatum than in brachycephalic skulls.

In order to obtain the differences in height between points outside and inside the skull, the fixed points must be projected in a plane.

[1] *L. c.*, vol. xxx., p. 134.

To get the simple direct measurements I have given up the designations inner and outer starting-points, and instead of these as a measure of the distance from the floor of the middle cerebral fossa to the external canal, I have taken the thickness of the upper wall of the canal at two different points.

I.—Measurements in the middle of the upper wall of the External Canal.

	INDEX ABOVE 1.30		INDEX BELOW 1.30	
Average.....	Right 6.76	Left 7.19	Right 5.01	Left 5.63
Maximum.....	" 11.0	" 12.0	" 8.0	" 8.6
Minimum.....	" 4.3	" 4.3	" 2.4	" 2.6

II.—Measurements at the inner ends of the External Canal (at the margin of the Incisura Rivini).

	INDEX ABOVE 1.30		INDEX BELOW 1.30	
Average	Right 6.47	Left 6.95	Right 5.41	Left 5.68
Maximum.....	" 10.3	" 11.0	" 8.5	" 8.0
Minimum	" 4.6	" 4.8	" 4.3	" 3.2

As in all my earlier measurements, the dolichocephalic skull gave not only higher average figures, but in the measurements at both places, without exception, higher maxima and minima than the brachycephalic. That is the best proof of the constancy of the relation found.

The thickness of the upper wall of the canal varied between 2.4 (brachycephalic) and 12.0 (dolichocephalic).

A new fact was found, viz., that here also there is a marked difference between the right and the left side. The bony roof of the canal was *thicker on the left side* in nineteen cases, thicker on the right side in six, and equally thick on each side in two.

IV.—The tegmen tympani and its defects.

I have previously spoken of the frequency with which spontaneous defects are found in the tegmen in brachycephalic skulls, and the rarity in dolichocephalic, and have

called attention to this fact in connection with the apparent difference in the thickness of the roof of the tympanic cavity in the two forms of skull.

Accurate measurements of the thickness of the tegmen, however, cannot be made. The under surface of the tegmen is often, like the floor of the tympanic cavity, rough and uneven, and at times shows openings into the epitympanic cells, so that I could not be sure where the point of the compasses should be placed. And as the bony plate to be measured is often only a fraction of a millimetre thick, the slightest error makes the measurement worthless.

It is, however, important to recognize the frequency of defects with a particular type of skull, and therefore I have continued my studies on a further series of skulls. I used first the collection of the Anatomical Institute and that of the Imperial Museum in Vienna, and later the Billharz collection of negro skulls in Freiburg.

The results were as follows:

	INDEX OVER 1.30		INDEX UNDER 1.30	
Skulls from the collections in :	without defects	with defects	without defects	with defects
Frankfort and Marburg (earlier studies)	39	0	83	9
Vienna and Freiburg	32	1	37	8
Total	71	1	120	17
	72		137	
Number of skulls	209			

Thus defects were found in the tegmen tympani in 1 of 82 dolichocephalic skulls, or in 1.4 per cent.; and in 17 of 137 brachycephalic skulls, or in 14.16 per cent., ten times as frequently in the latter as in the former.

V.—The position of the carotid canal relative to the tympanic cavity.

To get the distance of the carotid from the tympanic cavity, I measured the least distance between the tympanic sulcus and the carotid canal and found it to vary from 1.0 to 7.8, on an average 3.23. A difference in different types of skull was not found, but there was a slight difference between the two sides. The left carotid lay nearer the tympanic sulcus

than the right in 16 cases, the contrary was true in 10 cases, and in one case there was no difference between the two sides. The average distance was, left, 3.08; right, 3.14. The greatest difference in a single skull was 2.8.

In the negro skulls I found conditions which might easily permit the wounding of the carotid from the external canal. In one there was a defect and in the other an extremely thin wall between tympanic cavity and carotid canal opposite the external canal.

VI.—The position of the facial canal and the external semicircular canal relative to the tympanic sulcus.

In chiselling through the superior and posterior wall of the external canal into the attic of the tympanum and the aditus ad antrum, we run the risk of wounding the facial canal and the outer semicircular canal. In order to avoid this, Hartmann made measurements which showed how far the dangerous points are from the spina supra meatum and from a point 1 *cm* behind it.

As it may at times be necessary to remove the spine with the superior posterior wall in making a large opening into the tympanic cavity, we lose the guiding point.

I believe that in the posterior margin of the tympanic sulcus I have found a valuable landmark which may be used in such operations.

On the cut surface in my preparations the facial canal is distant from the posterior margin of the tympanic sulcus from 1.5 to 4.3 *mm*, 3.08 on the average, and mostly lies somewhat farther outward than the sulcus (usually 1.0–2.0, at the most 3.7). These figures apply only for the middle of the posterior margin of the sulcus. Exactly above this point the canal bends so that one can chisel into the aditus ad antrum above the height of the middle of the external canal, without reaching the nerve. It may also be mentioned that the canal at the height of the cut surface is in most cases separated from the mastoid cells by a 1–3 *mm* thick, dense bony sheath, a continuation of the labyrinth capsule.

The most external semicircular canal which was not reached by the section in many of my preparations, but lay above it, was on the average 6.13 *mm* distant from the tympanic sulcus, and somewhat lower.

VII.—The structure of the mastoid process in the various types of skull.

So far as could be made out from bones sawn through once, the condition of the mastoid process was as follows:

			INDEX ABOVE 1.30	INDEX UNDER 1.30	TOTAL
Condition of Mastoid	Uniform	Pneumatic	24	11	35
		Compact	0	6	6
		Diploic	0	2	2
	Mixed	Pneumatic—Compact	2	1	3
		Pneumatic—Diploic	6	2	8
Number of bones			32	22	54

In the 54 specimens, 35, or 64.8 per cent., were pneumatic, a high figure compared with Zuckerkandl's statement, according to which only 36.8 per cent. of mastoids are pneumatic. His statement was made after the examination of Middle-European skulls, mostly brachy- and meso-cephalic. My examinations show that pneumatic mastoids occur chiefly in dolichocephalic skulls. The skulls with an index over 1.30 had purely pneumatic mastoids in 75 per cent., and principally pneumatic mastoids in 25 per cent., no single skulls being purely of diploic or compact structure.

The predominance of the pneumatic structure in dolichocephalic skulls is probably due to the greater distance of the middle and posterior fossæ from the external canal and tympanic cavity, since pneumatic cavities in other places are found more in well developed bone than in that less developed. Comparative anatomy also confirms this rule, as, for example, in the frontal bone of the elephant. Politzer's statement, that the distance from the transverse sulcus to the external canal with a pneumatic mastoid is mostly great, and with a diploic or compact mastoid small, agrees with what I found, as I discovered that an extension forward of the transverse sulcus and a compact or diploic structure of the mastoid is mostly in brachycephalic skulls, and pneumatic structure and a great distance between the transverse sulcus and the external canal chiefly in dolichocephalic skulls.

A MARKED CASE OF RUDIMENTARY AND DISPLACED AURICLE, WITH DEFECTIVE DEVELOPMENT OF THE SIDE OF THE FACE.

By H. KNAPP.

(*With three figures.*)

ORDINARY cases of malformation of the ear, either by excessive or defective development or displacement, are not infrequent; also their combination with slight or moderate degrees of defective development of the face is not rare, but the higher degrees of this combination are, if I may rely on my own experience, seldom met with. A conspicuous example of this kind which came under my care last year, and of which I made careful notes and measurements, may therefore find a passing notice in these ARCHIVES.

July 28, 1891, Theod. Young, of New York, brought his two-week-old son to my consultation room. Both father and mother were healthy, the father thirty, the mother twenty-seven years of age. The little patient was their fourth child, and the only one that had any deformity. The left ear and the whole left side of the face were well developed (Fig. 1). The right side of the face, however, (see Fig. 3) was sunken and smaller in all its dimensions.

Both sides of the head proper were well developed and fairly symmetrical.

The right auricle was shrunken and misshapen. The upper cartilaginous part was a hard, bent ridge; the lower, soft, fibrous part (the lobule) was directed backward, almost at a right angle with the other. The whole deformed rudiment of the ear was much nearer to the bridge of the nose than the ear on the left side, the relative distances being 35 *mm* on the right side (Fig. 2)

and 49 *mm* on the left (Fig. 1). Behind the rudimentary right auricle, at the place where the auricle ought to have been, there was a shallow depression, indicating the orifice of the closed ear canal. Seen from in front (Fig. 3), the asymmetry of the face was very conspicuous, the distance from the nose to the ears measuring 37 *mm* on the right side and 45 *mm* on the left. The

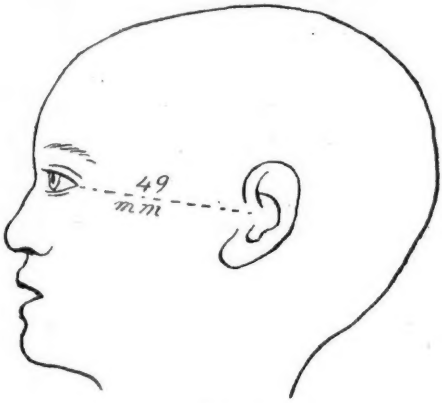

FIG. 1.

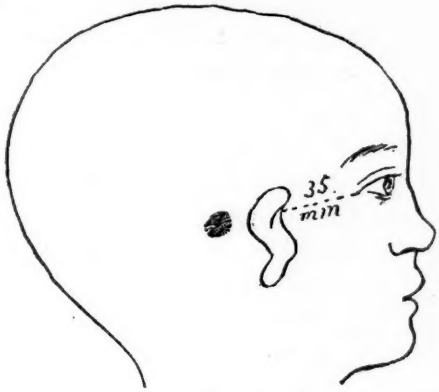

FIG. 2.

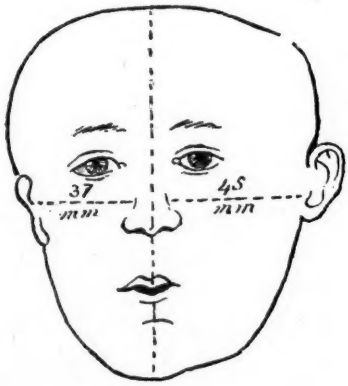

FIG. 3.

depression in the face indicated that, besides the temporal bone, the malar, palatal, and superior maxillary bones and the right half of the inferior maxillary must have been atrophic. Examinations of the buccal cavity and its contents were omitted. The child seemed to be healthy. I saw it no more, and when six months later I enquired after it, the father wrote me that the child had died at the age of two months and nineteen days.

The literature on malformations of the ear is quite extensive, and the cases in which the malformations were complicated with defective development of other parts of the head seem to have particularly awakened the attention of authors. By a number of post-mortem examinations (Michael Jäger,[1] Allen Thomson,[2] Wilde,[3] Toynbee,[4] Lucae,[5] Moos and Steinbrügge,[6] Jos. Gruber[7] and others) it is demonstrated that ordinarily with the rudimentary auricle bony closure of the ear canal and defective development of the middle ear are connected, whereas the inner ear is mostly but little or not at all changed. In a certain number of the cases the temporal, malar, palatal, and both maxillary bones have been found defective. Gruber (*l. c.*) and Schwartze[8] give drawings, in which the asymmetry of the face is, however, not very conspicuous. Virchow[9] publishes the autopsy of several cases, and concurs in the opinion of Heusinger,[10] who considers the malformations of the auricle due to irregular closure of the aural branchial cleft. Virchow elaborates this theory, believing that malformations of the ear and the adjacent parts of the skull originate in early disturbances in the closure of the first cervical branchial cleft. He thinks that these changes are not simply defects, but the result of irritative processes, causing indurations, adhesions, scar-like retractions, synostoses, hyperostoses, and other kinds of hypergenesis. "We have here, as in so many other monsters, to deal with very early multiple irritations or inflammations; if you like, a phlogistic diathesis." The writer was not aware that the theory of the phlogistic origin of congenital defects had in its support so high an authority as Virchow.

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[1] Von Ammon's *Zeitschr. f. Ophthal.*, Bd. v., 1837, p. 4.
[2] *Edinburgh Monthly Jour. Med. Science*, April, 1847.
[3] *Diseases of the Ear*, Phila. ed., 1853, p. 160.
[4] *Diseases of the Ear*, 1858, p. 15.
[5] *Virchow's Archiv.*, Bd. xxix., 1864, p. 62.
[6] ARCHIV. OF OTOL., x., p. 54, 1881.
[7] *Diseases of the Ear*. Translat. of 2d ed. into English, 1891, p. 211.
[8] *Lehrbuch d. chir. Krankh. des Ohres*, 1885, p. 67.
[9] His *Archiv.*, vols. xxx. and xxxii.
[10] *Virchow's Archiv.*, xxix., p. 361, Plate xii., Figs. 2 and 3.

A STRIKING CASE OF SIMULATED DEAFNESS.

By Dr. THOMAS BARR, Glasgow.

THIS was the case of a girl, a domestic servant, sixteen years of age, who was admitted to the Glasgow Ear Hospital on March 15, 1892, apparently absolutely deaf.

History before Admission : She reported that on a Sunday morning, four weeks before admission, as she was recovering from a severe cold in the chest and head, attended by loss of voice, she did not hear the sermon in church so well as usual. At the evening service she experienced still greater difficulty; on Monday and Tuesday she became worse and worse, until on Wednesday morning she found herself totally deaf on both sides.

In a letter received by me from a friend it was stated that she could not hear the report of a pistol fired close to her ear. Her doctor wrote in the following terms: "I saw her a fortnight ago for the first time and found her hearing quite gone, not even hearing the tuning-fork. I tried blistering over the mastoids, and potass. iodid. internally, but with no benefit. She has also been having strychnine internally and pilocarpin hypodermically, but with negative results." For a few days at first there were bells ringing in her ears, but these sounds passed off. She experienced no giddiness. Before this she had occasionally been temporarily dull from cold.

For a week her mistress had to communicate with her entirely by writing. After a time, however, she professed great proficiency in lip-reading, which had been acquired in a very sudden way. On Sunday morning, three weeks after

the beginning of the deafness, when her mother asked: "What are you going to have for breakfast?" she discovered that she could make out by looking at the face and lips what her mother said.

Condition on Admission: Loud shouting close to either ear or through a conversation tube produced no response. She disclaimed the power of hearing not merely articulate speech, but of hearing *any sound whatever*. When a large tuning-fork vibrating strongly was applied over the mastoid, near the orifice of the ear, or to the teeth, she shook her head and professed to perceive nothing. The objective examination of the ears furnished no information; the external and middle ears presented no signs of disease. The tonsils were, however, much enlarged. She claimed to have acquired the power of lip-reading, and gave no heed to any question or remark made to her unless she were looking intently at the speaker's face. On testing her carefully in regard to this professed power of lip-reading, she was found to understand wonderfully well when the conversation was audible, but when tested in such a way that the speaker did not emit a sound, while producing the facial, labial, and other movements associated with speech, she understood only in an extremely limited way. This peculiarity in lip-reading and her protestations of total deafness to all sound, aroused suspicion in my mind as to the reality of the deafness, and, partly to secure close observation, she was admitted to the Glasgow Ear Hospital.

Course after Admission to Hospital: The curator and matron co-operated in observing her closely. She continued to profess absolute deafness to all sound whatever; she ignored every question or remark unless her attention were first secured by touch or sign, when she looked intently into the speaker's face. If the matron questioned her in the dark or when alongside of her, she insisted upon first having the matron's face in the light and gazing upon it. She pretended to have greater difficulty with men who had moustache or beard. Various plans were tried to take her off her guard, such as asking her to go after examining her, and shouting to her when asleep, but with no success: she

always maintained the *rôle* of total deafness. Some of the servants in the hospital, who knew nothing of our suspicions, remarked that the patient sometimes seemed to get her hearing back for a moment and then it passed away again entirely. They had observed that she appeared at times to know what they said in circumstances which precluded the possibility of lip-reading. On two occasions when persons shouted very loudly into the ear she was observed to wink, although she refused to admit hearing anything. Notwithstanding our suspicions, it was resolved to treat her on the assumption of the reality of the deafness. The enlarged tonsils were at first excised, then pilocarpin, by subcutaneous injection, was administered twenty times at intervals of one and two days. On the first two occasions she received one eighth of a grain, afterwards a quarter of a grain. She remained in bed two hours after each injection, and salivated and perspired very freely. It appeared that when treated at home with hypodermic injections of pilocarpin, she sat on a chair at the fireside after each injection and neither perspired nor salivated.

Entire Recovery of Hearing : After having been in the hospital for five weeks we received demonstration that *she really heard.* A servant in the hospital had musical proclivities, and frequently sang to the indoor patients. One afternoon our patient was heard to sing the identical songs which had been sung by the servant in the forenoon of the same day. In the case of one of these songs at least, she admitted that she never had heard it before coming into the hospital. She evidently possessed a good musical ear and sang this song remarkably correctly. On being asked how it was that she was able to sing it, never having heard the song, she tried to escape from the difficulty by pretending to have acquired the air through noticing the face and mouth of the singer! This, I assured her, was impossible, at which she was evidently taken aback and began to weep. During the following day she was silent and moody, and in the evening she said to the curator: "I begin to hear a little in one ear." The curator, in order to encourage her, remarked that, as the deafness had taken three days to come

on, it might pass off in the same time. On the day following she said that her hearing was still better, and that the improvement was in both ears; on the third day she confessed that her hearing was perfect! On testing her now, she was found to hear the watch and whispered speech at the full normal distance in both ears. Our patient was now eager to go home, and she left the hospital after a residence of six weeks. Two months afterwards we were informed of the continuation of the normal hearing. On inquiry we were unable to trace any connection of the girl with deaf-mutes who might have been in the habit of practising lip-reading. She knew, however, the deaf and dumb alphabet from childhood, and for amusement had practised it with one of her brothers who was not deaf.

A SATISFACTORY TONGUE DEPRESSOR.

By CHEVALIER Q. JACKSON, M.D., PITTSBURG.

ON several occasions the writer has succeeded in getting a good view of the naso-pharynx in the rhinal mirror where others had failed—and he got it, not by superior skill, but by the use of a superior tongue depressor. The readers of the ARCHIVES may be interested in the following description of the instrument, abstracted from the *Medical Record* of May 7, 1892:

"The general outline of this new instrument is seen in the cut. It is smoothly made of a single piece of steel,

nickel-plated; it is light, simple, and readily sterilized by immersion in boiling water. It has a sufficiently narrow blade, not roughened, but deeply concaved beneath, thus holding the moist tongue by atmospheric pressure, that attaches it so tightly that the tongue may be drawn forward away from the posterior pharyngeal wall, thus to a great extent preventing retching. (In very sensitive fauces slightly warming is a further preventive.) The portion of the instrument com-

ing from the blade out over the teeth is thin and flat, and deviates to the right corner of the patient's mouth; thence it curves downward, forming a long handle well curved up into a hook below, to prevent the patient's hand slipping. After the operator has placed a depressor in position, the patient can depress his own tongue better than the operator can do it for him. In this way the new instrument is superior to all others (about twenty different patterns) tried by the writer. In position, it is easily held by the patient, and lies very flat and out of the operator's way, giving the maximum of available working space. For posterior rhinoscopy it is very satisfactory, and it draws the tongue forward, thus enlarging the oro-pharyngeal space. For this the patient is directed to push slightly forward on the handle.

"The instrument is made in two sizes, the larger one for general use, the smaller for the small mouths of many women and most children."

NOTES FROM GREAT BRITAIN.

SOCIETY MEETINGS.

LONDON POST-GRADUATE COURSE.—The following lectures have been delivered in connection with this course at the London Throat Hospital, Great Portland Street: On May 5th and 26th, Mr. W. R. H. Stewart, on *The Examination of Ear Cases*, and *Causation in Ear Diseases*. On June 2d, Dr. Law, on *Perforation of the Tympanic Membrane*. On June 16th, Dr. Woakes, on *Vertigo*.

We have also received the prospectus of the arrangements for the winter session, commencing October 10th, from which it appears that the following lectures on otological subjects will be delivered, viz.:

At the Hospital for Sick Children, Great Ormond Street, on November 3d, Mr. W. Arbuthnot Lane, on *The Treatment of Chronic Purulent Otitis and its Complications*. At the London Throat Hospital, on October 13th, Mr. W. R. H. Stewart on, *The Examination of Ear Cases*. October 20th, Dr. Law, *The Examination of the Throat and Nose*. October 27th, G. Stoker, Esq., *Chronic Glandular Disease of the Nose and Naso-Pharynx*. On November 3d, Mr. C. G. Wilkin, on *Nasal Polyps*. November 10th, Dr. Law, *Demonstration of Cases*. November 17th, Dr. Woakes, *Some Nasal Neuroses*. November 24th, Mr. Stewart, *The Causation of Diseases of the Ear*. December 1st, Mr. Stoker, *Impaired Movements of the Vocal Cords*.

THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION was held at Nottingham on July 26th to the 30th, and was in every way a great success. We regret to notice, however, that no special section was devoted to the subject of ear disease, but that both otology and rhinology were included in the laryngological section. Even if it is not considered advisable to have separate sections for these special departments of practice, the title of the

section in which they are discussed should at least be altered, so as to convey a correct impression as to the work to be done.

The laryngological section was opened on Wednesday July 27th by the president, Dr. R. A. Hayes. Among the distinguished visitors present were Professor Schroetter, of Vienna, and Professor Gruber. The subject of *Nasal Neuroses* was introduced by Drs. Stewart and Bronner, and the discussion was continued by Drs. Hovell, Lennox Browne, Scanes Spicer, Dundas Grant, Watson Cheyne, Robertson, Pegler, Barr, Semon, and MacIntyre. Professor Schroetter then made some observations upon *Neurotic Diseases of the Larynx*. Papers were read on *Rhinalgia*, by Dr. W. Hill, and on *Some Points in the Diagnosis and Treatment of Chronic Suppuration of the Antrum of Highmore*, by Dr. Scanes Spicer. Dr. Robertson discussed the *Treatment of Ozæna and Recurrent Nasal Polypi by Opening and Draining the Antrum of Highmore*.

On the following day, Thursday, July 28th, Dr. MacIntyre gave a demonstration illustrating the *Relationship of Bacteriology to Diseases of the Throat*. A paper on the *Importance of a Systematic Course of Physical Voice Training at Schools or Colleges, especially with Regard to its Influence on Prevalent Throat Troubles in Public Speakers and Others* was read by Dr. A. Sandford. On *Faults in Voice Production which Lead to Throat Disease*, by Dr. Lennox Browne. On *Throat Affections Peculiar to Voice Users*, by Dr. J. M. Hunt. On *A Frequent Cause of Irritation of the Throat in School Teachers*, by Dr. R. Ellis. Drs. Bennett and Barr made some remarks on the subject of *Voice Production*. In connection with Dr. Sandford's paper, resolutions were passed endorsing his views.

On Friday, July 29th, Dr. Bronner read a paper on the *Use of Trichlor-Acetic Acid in the Treatment of Ozæna*, upon which Dr. Lennox Browne made some remarks. Dr. Thomas Barr read a paper on the *Importance of Guarding against Injury to the Middle Ear when Treating the Nasal Passages and Naso-Pharynx;* Professor Gruber made some remarks. A discussion on the *Etiology and Treatment of Granular Pharyngitis* was opened by Mr. T. Mark Hovell and Mr. Lennox Browne, and continued by Drs. Donald, Stewart, Hunt, Ellis, Barr, Jacob, Warden, MacIntyre, Professor Gruber, and the president.

British Medical Association, South-Eastern Branch, East Sussex District.—At a meeting held at East Grimstead

on May 25th, Mr. Verrall read a case of *Meningitis from Ear Disease, Followed by Recovery.*

APPOINTMENTS.

KELLY, A. B., B.Sc., M.B. C.M. Glasg., appointed surgeon for diseases of the throat, nose, and ear, to the Victoria Infirmary, Glasgow.

LAKE, RICHARD, F.R.C.S., appointed registrar and pathologist to the Hospital for Diseases of the Throat, Golden Square, W. London.

TURNER, N. H., L.R.C.P., M.R.C.S., appointed surgeon to the Royal Institution for Deaf and Dumb Children, Birmingham.

WARDEN, C., M.D. Aberd., F.R.C.S. Edin., M.R.C.S., appointed consulting surgeon to the Royal Institution for Deaf and Dumb Children, Birmingham.

WILSON, T. S., M.B. Edin., M.R.C.P. Lond., M.R.C.S., appointed consulting physician to the Royal Institution for Deaf and Dumb Children, Birmingham.

WINGRAVE, V. H. W., M.R.C.S.E., L.S.A., appointed assistant surgeon to the Central London Throat and Ear Hospital.

MISCELLANEOUS.

The annual meeting for the aural instruction of the deaf and dumb was held on July 13th. Complaint was made of the paucity of teachers under training at the training college, and there was a slight deficiency in the funds.

In a communication to the *British Medical Journal* of April 2d, Mr. Field gives his further experience in the use of pilocarpin. In this paper much stress is laid upon the importance of carefully selecting the cases suitable for the employment of the drug. It is pointed out that patients who hear better in a noise do not derive much benefit from pilocarpin, nor do those who hear better after a cold; on the other hand, patients in whom the skull vibrations are but imperfectly heard may be advantageously treated with this substance, as may some cases of marked aural vertigo, and to a lesser extent those who hear worse when tired, nervous, or out of sorts, and best of all those in whom there is any syphilitic history, congenital or acquired. Cases are adduced, in which, according to Mr. Field, the patients have not only improved at the time of taking the drug, but the improvement has been maintained for many months subsequently, and appears to be permanent.

HEMORRHAGE FOLLOWING TONSILLOTOMY.—The reading of Mr. Lane's paper on this subject, at a recent meeting of the Clinical Society of London, has given rise to a good many comments, and various suggestions have been made as to the best way of dealing with these critical cases. Mr. Lane's treatment of his own particular case is quite beyond criticism, for it is obvious that no one but himself was in a position to decide as to the urgency of the symptoms which called for such a severe operation as that of tying the common carotid. In the *British Medical Journal* for May 21st, Dr. Mark Hovell suggests that, in some instances at any rate, the inefficiency of the astringents employed in the first instance is in great measure due to their faulty application. He recommends that a paste of one part of gallic acid and three of tannic acid, with a little water, should be rubbed firmly into the bleeding surface with the surgeon's forefinger, counter-pressure being made from the outside with the other hand.

In the same journal, on June 4th, Mr. Bilton Pollard relates a case in which he succeeded in actually ligaturing the two bleeding points, and incidentally expresses the opinion that in many cases the digital enucleation of tonsils is both possible and to be preferred to their excision.

A case of *Aural Pyæmia*, successfully treated by removing a putrid thrombus from the jugular vein and lateral sinus, is reported from the Liverpool Royal Infirmary by Mr. Rushton Parker. The patient had had rigors for three days, with a temperature of 103° to 105°. Discharge of fœtid pus from the left ear. Double optic neuritis more marked on the right side. The operation was performed on August 21, 1891, on the lines laid down by Mr. Arbuthnot Lane, and Mr. Ballance in 1888 and 1889. A plug of Horsley's antiseptic wax was used to check the bleeding from the sinus after the clot had been withdrawn, but this subsequently gave rise to symptoms of retention and had to be removed at another sitting. The patient left his bed sixteen days after the operation, and at the time of the report was doing quite well.

A lecture on *Aural Polypi*, delivered by Mr. Marmaduke Sheild to the students of Charing Cross Hospital, is published in the *Lancet* of May 28th. With regard to operative treatment, Mr. Sheild directs especial attention to the advantages of using a fine, slender, modified ring-forceps, with serrated teeth, like those of artery forceps, and a clamp-catch in the handle. A timely word of warning is also given as to the indiscriminate use of the plan of curetting out the tympanum.

INFLUENZA AND MIDDLE-EAR MISCHIEF.—To confirm the exception, which he had taken previously to a statement of Sir W. Dalby's, "that those with healthy ears have little to dread from influenza," Mr. J. Walker Downie, in the *Lancet* of May 28th, quotes two cases which he says are types of a series of acute middle-ear cases which have come under his notice, and in which the trouble has been distinctly traceable to an attack of influenza.

In the *Lancet* of June 4th, Mr. R. S. Miller emphasizes the importance of paying particular attention to removable causes of deafness that may sometimes be detected in deaf-mutes if they are carefully examined; and two very striking instances are adduced in which such attention resulted in a very satisfactory way—the patients, two little children of four years of age, being now on the way to having both speech and hearing restored.

Dr. Thomas Barr reports from the Glasgow Ear Hospital (*British Medical Journal*, July 2d) an interesting case in which he succeeded in removing an aural exostosis by means of the electric snare. The patient was a female aged twenty-four, and was admitted on account of severe aural pain and general symptoms pointing to the retention and absorption of septic material from the middle ear of the left side. A white, firm, rounded body was seen just inside the orifice of the meatus, attached apparently to the back wall of the canal at about the junction of the bone and cartilage. While firm it had not the ivory hardness of many of the exostoses found in this situation. The symptoms were such as to call for the removal of the tumor without delay, and the patient being anæsthetized it was decided to first try the electric snare, which, with some little difficulty, was passed behind the growth, and on turning on the current and exercising slight traction the pedicle was severed. The pain and other symptoms quickly disappeared. On examination, the tumor was found to consist of hard dense bone with a thin layer of cartilage on the surface.

In his remarks upon the case, Dr. Barr draws attention: 1, to the frequency with which these growths have their origin in the posterior or mastoid wall of the canal; 2, the rarity with which they are covered with cartilage; 3, that the frequent entrance of water into the meatus is an important factor in their causation.

Cases of *Cerebellar Abscess* are not only extremely difficult to diagnose, but even when the seat of the collection of pus has been located with some degree of probability, the prognosis of these cases has hitherto been looked upon as almost hopeless. Mr. H.

P. Dean, in the *Lancet* of July 30th, makes a most valuable contribution to our knowledge of the subject by detailing a case in which he had operated successfully. In his preliminary observations, Mr. Dean alludes to the fact that, while operations for the relief of cerebral abscess are nowadays frequently performed, yet, in the event of pus not being discovered in the expected situation in the cerebrum, a good deal of hesitation is evinced in continuing the explorations into the cerebellum, or in subjecting the patient to the ordeal of a further operation, and he proceeds to show how it is perfectly possible to do this with comparatively little risk, and, if the proper site be selected for the trephine opening, only one skin incision is necessary to enable us to thoroughly explore the lateral sinus and the parts both above and below the tentorium.

The patient was a female aged fourteen who had left otitis media for five years, and symptoms of cerebral mischief for three weeks. At the first operation, on April 20th, the mastoid cells were freely exposed and chiselled away, and sufficient disease was found in them to justify the hope that all the symptoms could be thus accounted for. Contrary to expectation, however, little or no improvement ensued, and further operation was thought advisable; this was undertaken fourteen days after the first. After reflecting the soft parts, the pin of the trephine was applied one inch behind and half an inch above the centre of the opening of the external meatus. The dura-mater having been opened, the cerebrum was punctured with a trocar in half a dozen different directions, reaching so far inwards as to tap the ventricles, but no pus escaped. The trephine opening was then enlarged in a direction downwards and backwards, the lateral sinus exposed and explored, and finally the cerebellum was punctured, and in this last situation the seat of the collection of pus was tapped and upwards of an ounce escaped. The patient subsequently made a good recovery.

In the ARCHIVES OF OTOLOGY, vol. xviii., Nos. 3 and 4 (September, 1889), p. 217, a somewhat similar case under the care, of Dr. W. Macewen is reported by Dr. Thomas Barr of Glasgow, and this, as far as we have been able to ascertain, is the only case previously published in which anything like success has attended the proceeding.

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